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A Lecture
ON
ANÆSTHETICS.

Delivered to Practitioners attending the Post-Graduate Course at Aberdeen

BY J. ROSS MACKENZIE, M.D. ABERD.,
ANÆSTHETIST AND LECTURER ON ANÆSTHETICS, ROYAL ABERDEEN HOSPITAL FOR SICK CHILDREN; ASST. ANÆSTHETIST, ABERDEEN ROYAL INFIRMARY.

ANÆSTHETICS are of importance to the practitioner and his patients from three points of view: (1) where the patient is sent to hospital or to a nursing home and the practitioner is not the anæsthetist; (2) where the surgeon comes to the patient at home, or to the cottage hospital, to operate and the practitioner gives the anæsthetic; (3) where the practitioner gives the anæsthetic and performs the operation.

There are several factors which modify general anæsthesia no matter by whom it is administered: (1) the preparation of the patient; (2) the psychic element in the patient; (3) the choice of the anæsthetic agent; (4) the combination of oxygen and carbon dioxide with the anæsthetic agent.

PREPARATION OF THE PATIENT.

These factors are more or less intimately bound together. The patient should be neither starved nor purged. Light, liquid diet may be continued in adults to within four hours of the operation, and in children and infants three and two hours. It is important to the patient's safety that there should be no solid food in the stomach when he comes to the operation table. Adult patients should have a teaspoonful of glucose or a lump of cane sugar three times a day, children may have barley sugar to suck ad lib, and infants frequent sips of sweetened water. This should, if possible, be continued for several days prior to operation. A simple aperient is best given two days prior to operation so as to ensure an evacuation of the bowel, but nothing more. Frequent drinks of water containing 10 to 20 gr. of bicarbonate of soda to the ounce increase the patient's blood alkaline reserve.

What is the importance of these measures? Normally there is present in the blood a certain percentage of sugar and this blood-sugar is absorbed by the tissues. In the normal metabolism of fats we get carbon dioxide, water, and heat, but under certain conditions, one of which is a deficiency of sugar in the blood, fats are broken up into oxybutyric acid and diacetic acid, with acetone as a by-product. The chief causes of hypoglycæmia are starvation, vomiting, purging, and sepsis.

So that in the interests of the patient we avoid any semblance of starvation, purgation, or enemata, and give plenty of sugar and alkalis both before and after operation. Such a régime protects the patient against the tendency to perverted or incomplete metabolism, which may be the main cause of (*a*) post-anæsthetic acidosis, (*b*) post-anæsthetic vomiting and nausea, or (*c*) delays or prevents the return of the vital cells of the body to their normal function.

THE PSYCHIC ELEMENT IN THE PATIENT.

The psychic effect upon the patient of an impending operation and of losing consciousness in anæsthesia is usually underestimated. Dread of the anæsthetic, often too well concealed, is the arch-enemy of the anæsthetist and frequently banishes both appetite and sleep. It affects adversely the stability of the nervous system, especially the vital medullary centres, and is expressed by palpitation, rapid pulse, pallor, and dilated pupils.

Why is it that patients take anæsthetics so well in obstetric practice? Most practitioners use chloroform for this class of work and almost invariably find that the patient takes it well and requires very little. The explanation lies in the psychic condition of the patient.

In surgery the anxiety of patients arises partly from fear that they will not wake out of the anæsthetic or that the surgeon may commence before they are properly asleep, and partly from dread of what may be found at the operation and whether they will recover. This anxiety may have continued for days and progressively increased to a maximum in the anæsthetic room. Here the mental condition of the patient is found to be highly detrimental to the safe induction and maintenance of anæsthesia. In obstetrics the opposite condition prevails; the patient's mental anxiety arises from fear that she will not get an anæsthetic; it completely passes as soon as the chloroform bottle appears and she is confident, not only that she will waken, but that when she does her troubles will be over.

Prophylactic Measures.—The anæsthetist should examine the patient before the operation, partly to assure himself of the patient's physical fitness and partly to assure the patient that he is in good form to take the anæsthetic. This is sound practice and highly beneficial to the patient, even if a consulting physician has already sanctioned the anæsthetic. An optimistic bearing on the part of the anæsthetist, even in the direst circumstances, gives some confidence to the patient. Adults receive 7 gr. of veronal the night before operation to ensure a good sleep; children have 10 to 15 gr. of ammonium bromide by the mouth. Morphine is a respiratory depressant and has a tendency to cause post-anæsthetic sickness and nausea, but it is a great boon to the patient, making him drowsy and largely indifferent to his unusual surroundings. Except where chloroform is the anæsthetic of choice adults have a hypodermic of 1/6 gr. of morphine and 1/100 gr. of atropine three-quarters of an hour before operation; children under 12 years should not have morphine but require a hypodermic of atropine three-quarters of an hour before operation. In the Children's Hospital babies get 1/200 gr., between 1 and 6 years 1/150 gr., and over 6 years 1/100 gr. Atropine is a very valuable adjunct to anæsthesia. In the case of ether it controls the secretion of mucus and prevents, water-logging of the respiratory tubes, excessive movement of the abdominal muscles, and the extraordinary muscles of respiration, with cyanosis and noisy inefficient anæsthesia. It diminishes the risk of post-anæsthetic respiratory complications. Atropine is also useful in chloroform anæsthesia since for any reason a change over to ether may become necessary.

Some physiologists and anæsthetists believe that atropine prevents undue excitability of the vagus centre in the medulla, and thus controls the passage through the vagus nerves of reflex stimuli which otherwise might produce inhibition of the heart's action. It is not convenient for the practitioner to arrive three-quarters of an hour before operation to give such a hypodermic, but the same dose dissolved in water may be given by the mouth the night before and repeated one and a half hours before operation with equally beneficial results; this can be carried out by the mother.

Let me put here a plea for the presence of the practitioner at the operation in hospital or nursing home. That is not always easy, but the beneficial effect on the patient's equanimity from the anæsthetic point of view is very important. Further, first-hand information is available of the surgical condition of the patient, as well as of the surgical measures taken to remedy it.

THE CHOICE OF THE ANÆSTHETIC AGENT.

A proper appreciation of the importance to the patient and to good anæsthesia of a well-considered anæsthetic agent is difficult to acquire. The tendency to follow a more or less stereotyped routine in every case—chloroform, ether, or even gas and oxygen—is quite wrong. The anæsthetist, whether practitioner or specialist, can arrive at a proper conclusion as to what agent will be most suitable only by making a preliminary visit to the patient and deciding upon the merits of the individual case. This visit makes

a pleasant impression upon the patient. It gives the assurance that every precaution is being taken for his safety and comfort, relieves the mental agony of the approaching ordeal, and provides against patient and anæsthetist being strangers when they meet in the anæsthetic room.

There are three principles which govern the choice of an anæsthetic.

1. The safety of the patient. This includes the immediate risk upon the table and the remote risk from post-anæsthetic complications. Gas and oxygen[1] is the safest anæsthetic agent, but its safety is largely dependent upon the type of patient, the surgeon who is to operate, and the experience of the anæsthetist. Open or perhalation ether comes next, but where there is any bronchitis or emphysema, or tendency to respiratory spasm, chloroform will not only be easier but safer to the patient.

2. It must provide an efficient anæsthesia for the surgical work on hand. In enucleation of tonsils, for example, the anæsthesia should continue for the duration of the operation, neither more nor less. In circumcision the anæsthesia should be deep enough to avoid reflexes reaching the medullary centres on clamping or cutting the redundant prepuce.

3. It ought to have the approval of the surgeon who is to operate. Coöperation between the surgeon and the anæsthetist is as essential in the nursing home as in the patient's home and the cottage hospital. There are few anæsthetists, whether practitioner or specialist, who can afford in the interests of the patient to be arrogant or quietly ignore the experience of the surgeon as to what anæsthetic is likely to prove most efficient for the patient and the task on hand.

The choice having been made, the anæsthetist's duty is to see that his anæsthetic table contains everything he may want in any emergency, to induce and maintain surgical anæsthesia, to keep the airway clear, and to watch with much diligence and constancy the effect of the anæsthetic upon the patient. It may appear a refinement of anæsthesia to mention the inclusion of a cylinder of oxygen in your armamentarium, but no operating theatre, not even an improvised operating theatre, is complete without oxygen at hand, and, one might add, of equal importance, at least to the patient, a cylinder of carbon dioxide.

GAS, OXYGEN, CARBON DIOXIDE, ETHER ANÆSTHESIA WITH DE-ETHERISATION.

The ideal anæsthesia is one which will temporarily inhibit the function of the cortical brain cells and break the sensory reflex arc without affecting the functions of the organs or causing damage to the tissue cells, and whose action ceases with the administration. Gas, oxygen, carbon dioxide, ether anæsthesia with local or regional analgesia and de-etherisation is the nearest approach we have to the ideal at present. It is almost completely reversible, highly evanescent in action, and leaves few traces of disturbance in the normal functions of the organism. Unfortunately, this type of anæsthesia requires an expensive and complicated apparatus, together with a considerable experience of an exacting technique for safe and successful administration.

There are three anæsthetic agents well suited to the practitioner who is giving an anæsthetic occasionally, and they have the three-fold merit of (*a*) portability (*b*) requiring no complicated apparatus, (*c*) providing surgical anæsthesia for almost any emergency. They are chloroform, ether, and ethyl chloride, with combinations such as chloroform followed by ether or ethyl chloride and ether.

CHLOROFORM ANÆSTHESIA.

Chloroform is a protoplasmic poison and is, therefore, a potent and dangerous narcotic agent which ought to be used for anæsthesia always with knowledge, caution, and must respect.

Several principles are constantly involved in its safe administration.

1. Free dilution of the vapour with atmospheric air. For this purpose an ordinary linen towel is much better than a mask. It should be held over the patient's face as a dome with the edges hanging free; chloroform is then allowed to drop on to the centre of the dome at a rate such as can be easily counted. Theoretically one should begin with 0·1 per cent. vapour and steadily increase up to 2 per cent.; the increased percentage is got partly by increasing the rate of the drop, but much more by increasing the area over which one is dropping the agent. When the induction of anæsthesia is complete, reduce the rate of dropping and maintain anæsthesia by supplying as much as is being lost by expiration. This will probably mean that throughout the operation 0·5 to 1 per cent. of chloroform will be sufficient. During the administration of chloroform the anæsthetist should be calculating in fractions of per cent. its effect upon the patient.

2. The second principle is a complete absence of intermittency in the administration. Intermittency, particularly during the induction, is probably the greatest single factor of danger in chloroform anæsthesia. A slow steady drop, gradually increasing the area over which you drop, is continued without a break other than to note the progress of induction until surgical anæsthesia is complete.

3. The third principle is a proper appreciation of the fact that the induction is the most dangerous period of the anæsthesia. Early in the induction of anæsthesia with chloroform the vagus centre in the medulla becomes extremely sensitive, and any reflexes passing from the operation area tend to cause the passage of stimuli through the vagus nerves to the heart, resulting in inhibition of the heart's action.

There are three conditions in which reflex stimuli are especially liable to produce this effect upon the heart: (*a*) during excitement and struggling; (*b*) interference with the patient during light chloroform anæsthesia; (*c*) status lymphaticus, or where there is an excess of lymphoid tissue. This irritability of the vagus centre passes away when surgical anæsthesia is complete.

The earliest sign of overdose with chloroform is shallow respiration due to depression of the respiratory centre and should attract attention at once. If noticed in time it will be sufficient to withdraw the anæsthetic and permit free ventilation with air or oxygen.

Infants and children take chloroform well. They go slowly through the greater part of the induction, then pass rapidly to surgical anæsthesia, and as rapidly into the danger zone. Children require very little anæsthetic for the maintenance of surgical anæsthesia and are readily overdosed. Babies often scream, and you are safe in dropping chloroform on a towel over the face until the crying ceases and then continue with ether. Children are frequently terror-stricken and the resulting psychic shock adds very materially to the danger of the anæsthetic. Infants and children tend to go to sleep early in the induction of chloroform anæsthesia, and the tidal exchange of air is so small that they only take in enough to keep them asleep. The respiration being quiet and regular and the corneal reflex absent, one is liable to conclude that they are in a state of surgical anæsthesia, but a towel-clip or a skin incision will produce a scene which ill-becomes and properly upsets the anæsthetist's dignity. If you have any doubt sharply pull up the mentum or push forward the angle of the jaw or pour on some ether, and your doubts will vanish. Infants or children showing any evidence of anæmia, or sepsis, or shock should not, under any circumstances, be anæsthetised with chloroform.

ETHER ANÆSTHESIA.

Ether may be administered to infants and children upon a linen towel, but a yankauer mask covered with a few layers of gauze is better. A layer of cotton-wool with a hole for the mouth and nose should cover the area of the face pressed upon by the mask. In adults an Ogston[2] mask is by far the most satisfactory method of producing perhalation ether anæsthesia.

[1] Mackenzie: Brit. Jour. of Anæsth., January, 1926, p. 122.

[2] Ogston: Brit. Jour. of Anæsthesia, October, 1924, p. 76.

1. Ether is highly irritant to the respiratory passages and must be given at first in minute doses so as to get the pharynx, larynx, trachea, and bronchi anæsthetised locally. In the first stage of induction with ether the less hurry the more speed, and neglect of this fact may produce cough, respiratory spasm, and cyanosis.

2. As soon as the patient is breathing easily and regularly continue a steady drop of ether on the mask. To produce surgical anæsthesia the entire volume of respiration must pass through the ether-laden gauze. The concentration of ether required for surgical anæsthesia in adult males is from 15 to 18 per cent. and its extreme volatility makes this difficult to attain with an open apparatus.

3. A clear airway is absolutely essential for ether anæsthesia.

Spasm of the masseter muscles may occur during induction and is best anticipated by putting in a gag or a dental prop before commencing. The tongue may fall back and partially occlude the airway. In such case the artificial airway will not only support the tongue but ensure a clear airway. Mucous secretion may collect in the pharynx, larynx, and trachea; this is a very disturbing condition both to the surgeon and anæsthetist and should never arise. Atropine prevents the stimulation of the secretory glands by ether, and if it has not been given or has not taken effect another dose should be given upon the table, the condition meanwhile being relieved by turning the head to the side so that mucus collects in the dependent cheek. Owing to relaxation of muscles the lower jaw may fall back and partially occlude the airway. Support with one finger at the angle of the jaw will be necessary.

4. Ether first stimulates the respiratory centre and then depresses it. Deep respiratory movements, such as take place in ether anæsthesia during both the induction and maintenance, may cause the loss by expiration of more carbon dioxide than is being produced by the metabolism. The normal hormone of the respiratory centre is carbon dioxide. If it is blown away by deep respiration a period of apnœa arises and may continue for 30, 60, or 90 seconds. It is a rather alarming experience to the inexperienced that the respiration should become shallow and then cease. In such circumstances remove the mask and satisfy yourself that the circulation is normal. If normal you may wait with equanimity, since the patient's metabolism will gradually produce sufficient carbon dioxide or other acid from deficiency of oxygen and incomplete metabolism to stimulate the respiratory centre and the respiratory cycle will commence again.

The immediate risk is probably ten times greater with chloroform than with ether. This does not take account, however, of the remote risk with ether.

ETHYL CHLORIDE—ETHER ANÆSTHESIA.

Open ethyl chloride is a very convenient method of induction. It is portable, easy to the patient, rapid in action, and safer than chloroform. In adults the same arrangements as for open ether are made. Instead of commencing with ether one sprays 3 c.cm. of ethyl chloride on the mask, and as soon as respiration is active drop ether upon the mask and continue until surgical anæsthesia is complete.

In children spray 1 to 1½ c.cm. of ethyl chloride upon the yankauer mask and drop ether slowly upon the mask. One minute later spray another 1 to 1½ c.cm. of ethyl chloride upon the mask and continue with ether. There is a considerable tendency to respiratory and masseter spasm with ethyl chloride. For that reason a dental prop or a gag in the mouth before starting the anæsthesia may be of great assistance. Stertorous respiration is the best indication of surgical anæsthesia with ethyl chloride. This sign is less evident with ethyl chloride and ether.

It is a very valuable anæsthetic for enucleation of tonsils, circumcision, or other minor operation, as well as for major operations.

Mixtures of chloroform and ether are not to be recommended because the stimulating action of ether upon the respiration may cause the inhalation of doses of chloroform, the effects of which are very difficult either to anticipate or measure. Induction with chloroform and maintenance with ether is a good method of anæsthesia for children. In enucleation of tonsils where chloroform is the anæsthetic it is good practice to complete the induction with ether because it is safer to the patient and gives 30 seconds more time for the surgeon's work.

LOCAL INFILTRATION ANALGESIA.

This is a method of infiltrating the skin and deeper tissues with a ¼ or ½ per cent. novocaine solution containing five drops of 1 in 1000 adrenalin to the ounce of novocaine. The sensory nerves within the area of infiltration are anæsthetised and do not conduct any painful stimuli to the brain. It is a method which should be of considerable value to the practitioner, since with its aid he may painlessly remove cysts, open abscesses, and perform other minor operations in his consulting room or in the patient's home.

Novocaine is safe, non-irritating, very reliable, and several ounces of a ¼ per cent. solution may be infiltrated without in any way prejudicing the healing of the tissues. The actual technique of the injection is simple. An all metal syringe with various needles is required. Commence your infiltration of the skin with a short, sharp needle, raising a wheal three-quarters to one inch in diameter; the only pain the patient should feel is the prick of the skin. It is possible to infiltrate the operation area by extensions from the wheal. Analgesia is complete in about 10 minutes, and its duration up to 90 minutes. The adrenalin added to the novocaine solution is sufficient to render the operation area in some degree hæmostatic.

In general anæsthesia, especially gas and oxygen, local infiltration of the operation area with novocaine is very important. Under general anæsthesia the patient does not feel pain, but his brain is profoundly affected by the repeated sensory impulses which reach it by cutting, tearing, or stretching of the tissues. These sensory impulses are a considerable factor in the production of surgical shock, and without doubt a method of preserving the patient's nerve vitality upon the operation table is to block the sensory nerves in the operation area.

An Address

ON

THE NEED FOR MEDICAL TEACHING ON BIRTH CONTROL.

Delivered before the Manchester Medico-Chirurgical Society on Jan. 12th

BY ARTHUR E. GILES, M.D., B.Sc., M.R.C.P. LOND., F.R.C.S. EDIN.,

CONSULTING SURGEON TO THE CHELSEA HOSPITAL FOR WOMEN, AND GYNÆCOLOGIST TO THE PRINCE OF WALES'S GENERAL HOSPITAL, TOTTENHAM.

AUTHORITATIVE teaching on the subject of birth control, or, to be more precise, conception control, is required for two reasons. In the first place such control is necessary in many cases within limits which I shall try to define; and in the second place, the general public already knows a good deal about it, and is anxious to know more. Instruction should be given by medical men. They are in a position to judge of the necessity for control on medical grounds and its advisability for economic reasons; moreover—and this is equally important—they can appreciate the conditions in which control is harmful medically or inadvisable ethically. They can also give information as to the best means to be employed in individual cases.

For want of proper teaching the public has had to go to popular books, some of which, written in an

erotic vein, with insufficient knowledge, and with a marked bias, are liable to do a good deal of harm. Those who have not had access to books, as well as some who have, have resorted to some so-called birth control clinics, staffed by non-medical persons who advise the use of appliances without selection of suitable cases or discrimination as to the means to be employed. In these two pictures, of the medical and the popular expositions of the subject, we have an epitome of the use and the abuse of teaching about birth control.

MEDICAL GROUNDS FOR BIRTH CONTROL.

I may say that I make use of the term birth control here because it is simple and generally understood. Strictly, it would include prevention of birth by the induction of abortion, but this, of course, we are not considering, as we are dealing only with the prevention of conception.

1. *Heritable Disease in Either Parent.*—Here we have to consider syphilis, tuberculosis, and mental disease. Syphilis is, of course, curable; and once cured it ceases to be heritable. But as long as there are positive signs in either parent, there is no doubt that the begetting of children should not be allowed. Tuberculosis should be regarded in the same way, though it is the tendency to the disease that is inherited rather than the disease itself. With mental disease it is a question of degree. Obviously, lunatics and imbeciles should not be allowed to have children, but the minor forms of mental instability are often so closely allied to genius that if such people were prevented from having children the loss might outweight the gain.

2. *Diseases that make Childbearing Dangerous to the Mother.*—In this category we may include some forms of heart disease, tuberculosis, and nephritis. Each case must be considered on its merits, but it is a canon of medical practice that the mother's safety has priority over the unborn child, and à fortiori, over the unbegotten child. In some cases the restriction need be only temporary and can be removed if the disease concerned clears up.

3. *Conditions that would Obstruct Labour.*—These include contraction of the pelvis, or the presence of a tumour or other abnormality. If the obstruction be removable, as in the case of a tumour, it is right to prevent conception until this has been done; but if it be permanent, as in the case of a contracted pelvis, the patient has the right to choose whether she will take the chance of pregnancy with a view to delivery by Cæsarean section, or whether she shall be exempted from pregnancy by the adoption of preventive methods.

4. *Previous Difficulty or Dangerous Deliveries.*—When a woman has passed through a difficult or dangerous confinement, I hold that she has the right to say that she will not face the ordeal again, even though the complications may have been of a type unlikely to recur. Some women, with an ardent desire for another baby, might be willing to take the risk. With others, the prospect of another such experience would entail intense mental suffering and might easily cause a mental breakdown.

5. *Childbearing in Excess of a Woman's Strength.*—There is no doubt that many women have borne large families with only short intervals between successive confinements, and have appeared to be none the worse for it. But with many it is different, and a succession of children close together has left them physical wrecks. It is not only permissible, but necessary, for medical men to advise preventive methods in such cases, in order that pregnancies may be both spaced out and reduced in number. And if a woman asks for help in such circumstances, I consider that she is entitled to receive it.

ECONOMIC GROUNDS FOR BIRTH CONTROL.

When we come to consider the economic grounds for birth control, ethical and sociological considerations overshadow the medical, and we find widely divergent positions taken up by thoughtful and conscientious persons. The ardent followers of Malthus adduce many reasons why the population should be held in check. In my opinion their concentration on abstract generalities places their vision out of focus for attention to the individual human side of the matter, which is at least as important. At the other extreme, some religious bodies, such as the Roman Catholic Church, denounce birth control in principle and can see no exceptions where it is desirable; save that they will rather unwillingly concede that there may be something to be said on medical grounds. My position is intermediate; I recognise that birth control is a contravention of natural law, and that such contravention can seldom be carried out with impunity. But facts must be faced, and there are cases where the penalty of compliance with natural law is greater than that of defiance of it. But if my position is intermediate, I must frankly confess that it is much nearer to the extreme of prohibition than to that of wide adoption.

The plea that a couple cannot afford to have more children is one that I should admit as a permissible reason for birth control. This presumes that they have one or more already. Moreover, the poor drudge of a working woman whose babies keep on coming, so that childbearing and ceaseless toil make up her whole existence, deserves our pity and our help, and the resources of medicine should be applied to the limitation of her family. But I should not admit that it is right for people to begin married life by practising birth control. If they cannot afford to have one child, they cannot afford to get married. And if the reason given is that they want to enjoy themselves and have a good time without the responsibilities of parenthood, I should say that the reason is an unworthy one. Let such people enjoy themselves and have a good time, and wait to get married until they have acquired enough unselfishness and seriousness of character to accept the normal responsibilities of married life.

METHODS ADOPTED.

1. *Abstinence.*—As a temporary measure this is reasonable, but for adoption during a considerable period it is not practical. It asks too much of human nature and opens the door to irregular practices and unhappiness.

2. *Restriction of Intercourse to the "Safe Period."*—There is no period that is absolutely safe; but it is generally agreed that the likelihood of conception is least in the latter part of the intermenstrual period. This is the best method to be adopted when birth control is desirable but not an absolute necessity. It is the least objectionable.

3. *Prevention of Entry of Spermatozoa into the Vagina.*—One method is by coitus interruptus. Generally speaking, this is unfair on the woman, as it is apt to leave her with desire excited but not satisfied. It is not to be recommended. The other method is the use of the condom. When birth control is essential, but for a time only, and the possibility of conception at a later date is to be preserved, the condom plan is the best. It has been maintained that it is essential for the seminal fluid to come in contact with the vagina in order that the woman may reap the full benefit of the act; but this is not proved and I hold it to be doubtful.

4. *Mechanical Prevention of Entry of Spermatozoa into the Uterus*—For this purpose various pessaries have been devised which are supposed to be introduced by the woman. They are all uncertain in action, and their chief virtue is that they are a source of revenue to those who sell them.

5. *Chemical Methods of Prevention of Entry of Spermatozoa.*—The chief of these is the quinine pessary whose contents, when the pessary melts, kill the spermatozoa. This is one of the most dependable methods, and it is free from the objectionable features common to some other plans. It is to be recommended when birth control is to be permanent. Douching is a method whose action is partly chemical and partly mechanical. It is fairly safe, but not absolutely so;

and it is a drawback, not unattended by risk, for the woman to have to get up out of a warm bed in order to use a douche.

6. *Surgical Methods.*—The vasa deferentia may be cut and tied in the man, or the Fallopian tubes in the woman. Cases of performance of the operation on the man are very rare; and in the case of women it is hardly justifiable to perform an operation for this purpose alone. But when an operation is necessary for some other reason, it is a proper and legitimate procedure to divide the tubes at the same time. There are various ways of doing this: the method that I adopt is to divide the tube and overlap the two ends about an inch, tying a ligature round both at each end of the overlapping portion.

DRAWBACKS IN PRINCIPLE TO BIRTH CONTROL.

There are drawbacks to birth control on public as well as on personal grounds. A detailed examination of the public grounds would carry me too far into the Malthusian doctrines and I will dwell on one point only—namely, the disadvantages to a country that result from a falling birth-rate. It is said on the other side that there is neither work nor food enough for all, and that the proper remedy is to limit the number of future wage-earners and food-consumers. My own view is that the fault is due to the conditions of work and not to the numbers, and that altered conditions would provide work enough for all the unemployed in the country. If birth control could ensure the elimination only of the unfit, the wasters, and the degenerates, something might be said for it. But, on the contrary, those who are least likely to breed valuable citizens are also the least likely to take any steps in the matter. Restriction is more practised by thoughtful and efficient parents, whose offspring might well be of the greatest service to the community.

Then there is the personal side; and here I am not concerned with cases of restrictive methods adopted after several children have been born. But I am deeply concerned with restrictions adopted at the beginning of married life. The immediat eeffect is to foster selfishness and self-indulgence in the married couple and to rob the early married life of much of its proper romance. The later effects are not invariable; but I have met many instances of people who have avoided the possibility of childbearing in the early years, and later on, when they have changed their mind and thought that they would like to have children, they have not been able to do so. I do not know how this has come about in individual cases. It may be through some change in endocrine activities, due to distortion of the normal sex-act. In some cases it may be due to the method employed, for I have long been convinced that the prolonged use of quinine pessaries may have this effect. However it may be, there is no doubt about the unhappiness and the disappointment, the regrets and mutual recriminations and sometimes even the permanent estrangement and separation that the later years of married life may enfold.

Another late result is the physical one. Repeated sex-stimulus in early married life without the physiological rest and outlet provided by pregnancy predisposes to hyperplasia, chronic congestion, and the development of uterine fibroids.

DRAWBACKS INHERENT IN CERTAIN METHODS.

The least harmful plan is undoubtedly the restriction of intercourse to the so-called safe period. Of mechanical means the condom is probably the least objectionable. Coitus interruptus has a bad effect on the woman's health in many cases. I have spoken of the possible effect of quinine pessaries in leading to permanent sterility. Some of the so-called check pessaries may set up an ascending metritis and salpingitis when used by careless and ignorant women.

CONCLUSION.

Birth control is a necessity on medical grounds in certain circumstances, and it is expedient on economic grounds in a few cases. The medical profession should lay down its indications and point out its limitations. To those who wish to practise it for economic reasons, its risks and drawbacks, immediate and remote, should be pointed out; and when it is necessary, the best method to be adopted in each individual case should be explained.

SPECIFIC STIMULATION THERAPY AND PROTECTIVE INOCULATION IN TUBERCULOSIS.*

BY GEORG SCHRÖDER, M.D.,
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THIRTY-FIVE years have passed since the discovery of tuberculin by Robert Koch, and in this long period many investigators have worked at the problem of specific treatment, without finding—it must be confessed—any firm basis for this difficult department of knowledge. I have myself tested most of the so-called specific remedies for tuberculosis on a large number of patients during the last 30 years without finding any specific that can be absolutely relied upon for treatment or for prophylaxis. At the same time, we all know that there are remedies derived from the bacillus which have a specific action upon the foci of disease. To these the tuberculous patient is quite remarkably sensitive. They all have the power of promoting the formation of tuberculous tissue.

This pronounced sensitiveness of the affected organism towards tuberculin preparations consists in an increased tendency to inflammation. We know now that a number of other substances, such as protein bodies, chemotherapeutic remedies, metallic salts, arsenic, are able to start distinctly more active inflammatory changes in the tuberculous than in the healthy. Here must be included radiotherapy, and to a considerable extent all our general remedies.

And yet we are concerned in these non-specific stimulants with something quite distinct from the specific ones obtained from the bacillus. The latter act in extremely small doses, and are able (as already stated) to start the formation of tuberculous tissue. On these two points rest the only certain facts that we know about the specific action of the above-mentioned preparations.

Theories of Mode of Action of Tuberculin.

Many theories have been formed to explain the mode of action of tuberculin. They were originally based upon the supposition that it was a true antigen, that the antibodies which we find in the blood of the tuberculous have a direct connexion with the antigens, and that the action of tuberculins must be explained as a form of antigen-antibody formation in the sense of Ehrlich's theory. These notions have all suffered shipwreck. It would take me too far to go into details; but we know now that the tuberculins are not immunising remedies, and that they cannot be regarded as true antigens. The theory of Bessau, which assumes that the sensitiveness to tuberculin depends on the formation of so-called tuberculocytes through stimulation of the mesenchymatous tissues, is suggestive. According to Bessau, the result is the accelerated formation of stronger tuberculous tissues. Selters's explanation is, however, more in accord with the facts as known to-day. According to him tuberculin is an irritant which causes inflammation of tuberculous tissue without being altered or bound up therewith.

Feldt and I have proved that the natural disintegration of the focus of disease is accelerated through stimulation by the so-called specifics. The toxins arising from the disintegrated tissues and bacteria bring about the general and focal reactions by means of the sympatheticotonic nervous system and the

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endocrine organs. The collateral zone of inflammation is a protective reaction. The reticulo-endothelial (mesenchymatous) tissues are stimulated. When the stimuli are not too strong connective tissue results, which penetrates the tubercle and causes it to undergo fibrosis.

Specific remedies are valuable because in suitable cases they can increase these natural reactions of the body when deficient.

Allergy.

We now come to the meaning of the so-called allergy. We understand by this term an extreme sensitiveness of the whole cell-system of the infected organism to the infective agent and its products, as well as to some other irritants. The Pirquet reaction is a good example of this allergy, which is a very useful guide to the degree of natural resistance. The stronger the allergy, the greater the resistance. Whether we can call forth a typical allergy with dead tubercle bacilli or tuberculin in a non-tuberculous body is not yet proven. Observations, however, are increasing which prevent us from dismissing this possibility altogether.

I need only remind you of the beautiful experiments of Bessau, who injected dead tubercle bacilli intraglandularly, and obtained thereby local sensitiveness to tuberculin which lasted for more than a year; of the experiments of his assistant, Fernbach, who reached the same end by intraperitoneal and intraglandular injections of dead virus; also similar results by the two Americans, Zinssew and Petroff. I touch upon this subject here because it has a bearing upon our later consideration of protective antituberculous injections. There was, however, always present tuberculous tissue in the above-mentioned experiments.

Allergic behaviour and the degree of resistance to the infection run, therefore, to a certain extent, parallel. We have seen this in thousands of cases; with increased allergic reaction there went not only improvement of the general health, but also of the local foci, whether the patients were treated with specific or non-specific or only general remedies, which (as already stated) also have a non-specific stimulating action. Tuberculins are not immunising remedies. Methods of treatment which aim at the reduction or abolition of sensitiveness to these preparations (so-called "positive anergy") are dangerous. As a rule, in such cases all the allergic reactions return after a short time; but while they are feeble or absent we often see a decided tendency to metastases. This was recently brought into prominence in Hamburger's clinic in the case of tuberculous meningitis of children. We find in so-called "positive anergy" that tuberculous foci in the larynx, kidneys, bones, and joints do not heal up. All these experiences and observations convince us that the end to aim at is the support and increase of allergy, not its artificial reduction.

We need not here distinguish (with Much) between toxin sensitiveness and tuberculosis sensitiveness; this seems to me altogether hypothetical and not sufficiently confirmed experimentally. Real anaphylatic reactions are not found in the tuberculous. The tuberculin reaction is not to be regarded as an anaphylactic phenomenon.

My view of the prognostic value of the allergic test, which the French medical school has long adopted, is finding more and more supporters. There are many clinical and experimental observations which show that a strong allergy may be regarded as favourable, and which also prove that in many cases we can increase the reactive power of the infected organism by small doses of a specific stimulant. In addition to the ordinary clinical tests of progress I make use of a graduated Pirquet, together with various blood-tests: red corpuscle sedimentation tests, complement-deviation test, Arneth's blood count, proportion of lymphocytes, lipase, serum albumin. These run parallel to a considerable extent.

Choice of Cases for Specific Treatment.

Which cases are suitable for specific therapy, and how do we distinguish them? The clinical anatomical state of the patient is of very great importance in answering this question, since the cases tending to fibrosis are especially suitable. All those in which the exudative character of the disease is marked can only be treated specifically with the greatest caution. Before beginning such treatment the patients should always be kept for some time under careful clinical observation, using all the appropriate tests, although we cannot expect to divide our cases into purely fibrosing and purely exudative forms. How could the clinician make such a diagnosis when the pathologist can only decide the anatomical nature of the cases with the help of the microscope? We have also to do with mixed forms in most cases we are called upon to treat. Clinical experience, X ray pictures, a careful physical examination of the lungs, and, above all, prolonged clinical observations, can, however, determine the predominant character of a case; and this suffices for our purpose. Moreover, the allergic behaviour is, in my opinion, most important in choosing our cases. If there is a strong allergic reaction, if the blood count is normal, there is no fever, and the disease is mainly of the fibrosing type, then specific therapy is not necessary; general remedies will suffice. If, however, cases mainly fibrosing only give a feeble allergic reaction, if the blood count shows Arneth's movement to the left, if there is a small proportion of eosinophils and a reduction in the number of lymphocytes, if further there is a tendency to fever, if then we have the picture of a sinking resistance towards the disease, we are called upon to use specific remedies, and to try to raise the resistance. We should repeat the allergic and blood tests from time to time—blood counts, sedimentation, lipase, serum albumin. When these show a notable improvement in resistance, we can leave off the specific treatment; if they again become less favourable, specific therapy is again indicated. Absolute contraindications are: long-standing fever, well-marked disturbances in the circulatory and nervous systems, strong tendency to metastasis, and, above all, a predominant tendency to exudation.

A few words are called for concerning tuberculosis in children. We all know that there is a well-marked tendency to recovery in the primary stage, so that these cases seldom come for clinical treatment. The generalising forms in the secondary stage in children are mainly exudative; they often show a very strong tendency to resolution, and, as a rule, have a high degree of allergy. I would strongly advise caution in attempting specific treatment in such cases, and recourse to prolonged general treatment instead.

Choice of Remedy.

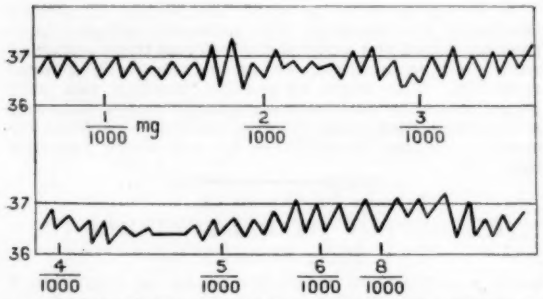
What specific remedies should we employ? As you know, there are many tuberculin preparations from which to choose. They differ in strength rather than in quality, and will all give similar results with appropriate dosage. Formerly we used Koch's *Old Tuberculin*. Many believe that with this remedy they get the best results, because it most easily and most certainly leads to so-called "positive anergy," or "biological cure." This view is untenable in our opinion, as already explained. If we employ old tuberculin, we must use the smallest possible doses, beginning, perhaps, with 1/10,000 mg., rising very gradually to 1/100 mg., with intervals of eight to ten days. Longer intervals should be left after each dose than is customary, to wait for the fall of the reaction. Wright has done a notable service in showing the need of longer intervals between successive doses. We can strongly recommend his method from our own experience. The dose is increased until the reactivity of the patient, tested in all the various ways already mentioned, has notably increased. Then we should leave off specific therapy.

As the old tuberculin seemed too toxic, we tried next the *B.E.* and the *S.B.E.* We had good results also with these in hundreds of cases suitable for specific therapy. We began with 5/1,000,000 mg. and rose to 1/1000 mg., with intervals of 10 to 14 days. Very seldom did we go beyond these doses, as we

obtained improvement from these, tested in the various ways.

The researches of Deycke and Much on *partial antigens, AFN*, are well known. An enormous literature dealing with these remedies exists. They have, however, not helped us as much as the old preparations of Koch. I speak of several hundred patients who were treated with partial antigens, according to the method of Deycke and Much, and can say from my own experience that this troublesome method gave no better results than the other specifics. Naturally we could raise the reactivity of the patient with the partial antigens; the results confirmed the value of allergic tests in prognosis. The researches of Deycke and Much were especially valuable for the light thrown on the protective action of fats and lipoids, which, perhaps, has some meaning in regard to tuberculosis. We know that the high lipoid value of the blood indicates a favourable, a low one an unfavourable, form of tuberculosis. But it is questionable whether the defensive value of fats and lipoids is all that Much would have us believe.

Recently we have been especially interested in *tebeprotin* of Tönniessen—a protein derived from tubercle bacilli, consisting of a chemically pure whitish powder entirely soluble in soda solution, and, therefore,



A case treated with tebeprotin. Shows feeble temperature reactions after the higher doses, finally reverting to normal; typical lymphocytosis and an increase in monocytes, the eosinophils remaining unchanged. Initial temperatures before injections: max. 37°, min. 36·5° C. Doses increased from 0·001 mg. to 0·008 mg.

permitting of accurate dosage. This is an advantage over some other specifics. It is less toxic than old tuberculin and causes a milder reaction. The initial dose is 1/10,000 mg., or in strong subjects 1/1000 mg., given once a week in very slowly increasing doses up to 5/100 mg. We have so far employed it in about 100 cases, and obtained as good results as with B.E. and S.B.E. The proportion of patients who lost their tubercle bacilli under treatment was a little higher than our average. We often had the impression that patients under this remedy who had subfebrile temperatures lost their fever more quickly, and that the foci showed a greater tendency to fibrosis than with other specifics. With this remedy and the blood sedimentation test we can obtain useful information concerning the activity of the disease, testing the blood before and after an injection of 1/20–1/40 mg. tebeprotin. A definite retardation of sedimentation is a sign of active tuberculosis.

So much for the subcutaneous use of specifics.

Other Methods of Administration.

Recently there have been attempts to utilise the important skin-resistance to infection. By the introduction of stimulants subcutaneously, subepidermally or percutaneously one endeavours to set going processes which may usefully influence the focus and the general health of the patient. In this way Klaus Schilling employed his "ertuban," a watery extract of human tubercle bacilli. It is given at first in doses of 1/10,000 to 1/1000 mg., carefully increased. Sahli has very thoroughly worked out his method of administering tuberculin subepidermally. He made use of Beraneck's tuberculin, and began with the weakest concentrations, injecting 0·1 c.cm. Here, also, the doses are increased very slowly, always under the control of the allergic condition, the blood reaction, and the general health. The percutaneous administration of specific stimulants may take the form of *liniments* (Petruschky), of Moro's ectebin, and other tuberculin *ointments*. This method is appropriate, I think, in cases which are well suited for specific treatment, but in which the exudative character still predominates. The method has been useful, more especially in children. Still, we employ it in adults with low allergy, if temperatures become unstable, and the general course of the disease does not yet show a decided tendency to fibrosis of the lesions. This percutaneous method of specific treatment is, as far as our experience goes, always milder in its effects than the subcutaneous, although even here there are unexpected exceptions. Even these doses may cause mischievous local reactions, so that we begin with very small doses and long intervals.

It has often been stated that the tuberculin liniments of Petruschky are not active; but our experience does not confirm this. Certainly Moro's "ectebin" is more active; it is a mixture of dead tubercle bacilli in anhydrous lanolin. Typical tuberculides result, furnishing immunising centres.

In Germany Ponndorf's method is widely adopted. This consists in scarification of the skin, followed by rubbing in of concentrated old tuberculin. I must oppose this method unconditionally. The activity is not controllable, the dosage altogether uncertain. I have seen formidable local reactions and mischief to the patient from the method. It may possibly be employed in the modified form of Gehrcke, Schmidt, and Arneth, who recommend quite small patches and careful dosage; but I cannot find any advantage over the older methods.

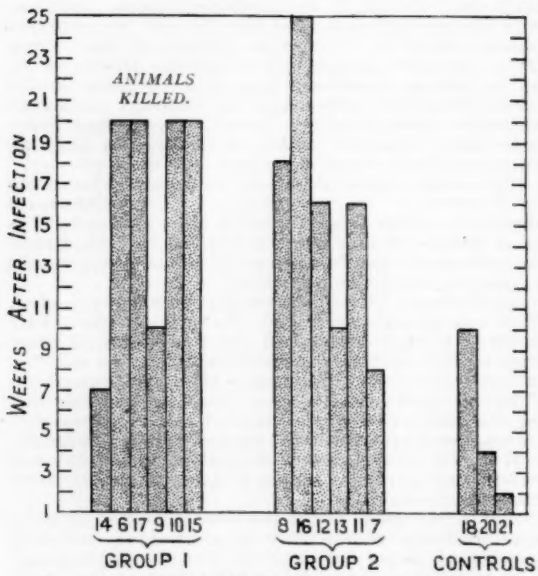
Yet a few words about the administration of these specifics *by mouth*. Koch's preparations do not here concern us, as they are destroyed in the stomach and bowel, and we cannot follow the effect of the disintegration products in the lymph stream. Deycke has recently warmly recommended his M.T.B.R. (Milchsäure - Tuberkel - Bacillen - Rückstand). From blood examinations it has been shown that we have here to do with a definitely active therapy. There was mostly a reversal of the serum albumin curve after these doses; and according to Meyer-Bisch there was a positive focal reaction (increase of water content of the tissue). We have confirmed these statements in patients and by animal experiments, and have also proved that general and local reactions may follow. We would, therefore, urgently advise as great care to be exercised in this as in other methods of specific treatment.

Protective Inoculations.

We now come to protective inoculations against tuberculosis. We have already explained exhaustively that we cannot immunise against tuberculosis with specific preparations. According to present knowledge, we must admit that we can only be sure of immunising against infections by means of living virus. The ideal would be to produce a focus which did not extend; in this way a certain protection would result. This is what v. Baumgarten and v. Behring attempted in their inoculations of cattle. Klimmer, v. Ruck, Möller, and others have attempted the same in human subjects. Möller and Friedmann worked with living bacilli from cold-blooded creatures. Friedmann's method has, on the whole, as you may know, proved itself a failure. There is, moreover, some danger of these bacilli becoming converted in warm-blooded subjects into pathogenic forms, from which I believe, they were originally derived. Kolle, Schlossberger, Kaufmann, and I have shown this in experiments on animals, though Calmette and other deny it. (Photographs were shown from guinea-pig organs, showing a typical tuberculosis after the third transplantation with Friedmann's strain.) Recently I had an opportunity to excise and examine

a fistula caused by Friedmann's method of treatment. The section showed typical tubercles. Such a focus naturally has an immunising effect, but is not without its dangers.

During the last few years attempts have been made to immunise animals and children against a virulent tuberculous infection, by means of more or less weakened and non-pathogenic virus. I refer to Selters's vital tuberculin; Calmette's B.C.G., strains grown by Arima, Aoyama, and Ohnawa on culture materials containing saponin; to Raw's preparation,



Survival of infected rabbits with and without protective inoculations.

in which tubercle bacilli killed by heat are employed; to Shiga's and Langer's vaccines. In all these vaccines we have to do with more or less non-virulent bacilli. We cannot yet give a final verdict upon these methods. There are very serious objections to them, and in any case years must pass before we can be sure of their value.

Recently I made similar experiments in connexion with my investigations on the influence of splenic extracts on tuberculously infected animals. With the help of extracts from lymphocytic organs we can biologically produce vaccines containing entirely non-virulent tubercle bacilli. With these vaccines I tried to protect rabbits against subsequent bovine infection. Protection followed for some months, and where infection eventually resulted there was a noticeable increase in resistance. The above diagram illustrates the duration of life in three groups of rabbits experimented upon. The first group consists of animals inoculated and then infected. Four were killed, and found to be free from tuberculosis. The second group consists of animals inoculated after infection. These died of tuberculosis, but survived considerably longer than the controls; and on examination showed a greater tendency to fibrosis. The third group (controls) consists of animals infected without any protective inoculation. In these was found a tuberculosis spread over the whole of the lungs. This was not found in any animal which had had a protective inoculation.

These vaccines evidently give a notable protection against following infection. Whether they are capable of starting healing processes in human tuberculosis remains to be proved. In a few patients there seemed to be a beneficial influence. I cannot say more, as there has been too short a time for observation. Still, these experiments point out a way in which active immunisation against tuberculosis may be obtained. Passive immunisation by means of serum I do not believe to be possible, in spite of the numerous attempts that have been made. All the sera hitherto recommended by Marmorek, Maragliano, Ruppel, Uhlenhuth, and others have led to no practical results.

Serum therapy is, in my opinion, in tuberculosis a non-specific stimulant therapy. If we wish to employ such non-specific remedies, we can do so more safely with Lipatren from the Behring works.

Ambulant Therapy.

If we review all the facts concerning specific therapy, it is obviously by no means easy, and needs such a careful observation of indications and so exact a clinical control that it cannot be carried out under ambulant conditions without the greatest difficulty. We have always taken the view that ambulant specific treatment is to be avoided. We believe, however, that it can be carried out under ambulant conditions if it was previously employed with benefit in a sanatorium or hospital where all the necessary details have been observed. In that case the practitioner who is possessed of all the data can continue the treatment with success. He must, however, continue to observe all the clinical details, and record them, together with the general remedies employed.

It is not possible to state the results of specific treatment statistically. The recoveries which I have seen are about the same statistically as those obtained with gold salts alone, or exclusively with general remedies. The value of specific therapy can only be estimated in each case separately, and in this way we come across patients who obviously profited by specific therapy in addition to our other remedial measures.

THE EFFECT OF PARTURITION ON THE HEART.

WITH A REPORT ON EIGHTEEN CASES OF PREGNANCY COMPLICATED WITH AURICULAR FIBRILLATION.

BY A. LEYLAND ROBINSON, M.D. LOND., F.R.C.S. ENG.,
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THE normal heart is composed of healthy muscle, has competent valves, and maintains a regular rhythm, and possesses a reserve power which ensures a smooth physiological response to extra, and even extraordinary, effort. The effect of diseased processes, whether they be muscular, valvular, or rhythmic, is to reduce the efficiency of the heart by limiting the capacity of this reserve force. If the disease is progressive, or the demand for work excessive, then sooner or later the reserve force is so reduced that the heart is unable to meet the demands made upon it.

A pregnant woman with auricular fibrillation has her cardiac reserve power depleted by the following factors or loads: (1) the valvular lesion; (2) the altered rhythm; (3) the strain of pregnancy and labour; and apart from this mechanical factor, the frequency of toxæmic states must not be forgotten—conditions in which degenerative changes are commonly found in the musculature and blood-vessels.

The association of pregnancy and fibrillation forms a complex that embraces all the commonest and most powerful factors concerned in the production of heart failure. The mechanism whereby heart failure is produced by these loads belongs to the province of the cardiologist, but the influence of pregnancy and labour is of peculiar interest and importance to the obstetrician, and requires some amplification.

Effect of Parturition on the Normal Heart.

Pregnancy.—The weight of the child is a mechanical stress that increases as pregnancy advances. The growing uterus displaces the abdominal organs, compresses the diaphragm, and impedes the movements

MITRAL STENOSIS.

Case No.	Age.	Parity.	Previous labours.	Disease.	Pregnancy.				Labour.				Immediate result.
					Symptoms and signs.	Heart failure.	Cardiac reserve.	Duration of in-patient treatment.	Period of pregnancy in weeks.	Method of delivery.	Heart failure.	Duration of labour.	
												Hours.	
1	29	2-para.	?	M.S.	A.F.	Nil.	Good.	1 week.	33	N.F.	Nil.	—	Satisfactory.
2	36	7-para.	?	,,	A.F.; œdema lungs.	E.	Fair.	10 weeks; good R.D.	†40	,,	Nil.	20	,,
3	28	1-para.	—	M.S. and R.	A.F.	E.	Fair.	3 weeks; good R.D.	38	,,	Nil.	—	,,
4	28	4-para.	1, 2, normal labours; 3, cough and bronchitis; 4, premature.	M.S. and R.	F.; liver enlarged.	P +	Poor.	4 weeks; good R.D.	36	N.F.	Present +; air-hunger; pulse-rate 154	—	Left hosp. 10 days before delivery, and returned in labour; compensation re-established after delivery.
5	27	P.-gr.	—	M.S.	A.F., cyanosis, dyspnœa, albuminuria.	P +	Very poor.	6 weeks; good R.D.	†40	Cæsarean section (twins living).	Nil.	—	Satisfactory.
6	24	1-para.	Signs of heart failure during pregnancy and delivery.	,,	Hæmoptysis; œdema; F.	E.	Poor.	Refused treatment in hosp.	—	N.F. at home.	?	—	Died 3 weeks after delivery.
7	30	P.-gr.	—	,,	F.; liver enlarged; albuminuria.	P + +	Nil.	—	16	Induction of abortion with bougies.	—	2	Advanced heart failure on admis.; died. See (*e*).
8	24	P.-gr.	—	,,	F.; generalised anasarca.	P +	Poor.	3 weeks.	36	Induction N.F.	Present +*; (see below).	37½	Death 3 days after delivery.
9	44	6-para.	? normal labours.	,,	F.; hæmoptysis; anasarca; pleural effusion.	P + +	Nil.	Patient refused to come into hosp. until in extremis.	38	N.F.	Present + +	4	Death 2 days after admis.
10	33	3-para.	? normal labours.	,,	F.; liver enlarged.	P + +	Nil.	Nil.	27	Undelivered.	—	—	Advanced heart failure on admis.; died. See (*f*).
11	45	P.-gr.	—	,,	F.; liver enlarged; cyanosis; air-hunger.	P + +	Nil.	Nil.	40	,,	—	—	Death 4 hours after entering hosp.
12	34	1-para.	Abortion at 3½ months.	Aortic R. double M.	A.F.; cough; œdema; albuminuria.	P +	Very poor.	6 weeks; fair R.D. See (*a*).	34	Induction and forceps.	Present + +	10½	Death second day after delivery.
13	35	P.-gr.	—	Aortic R.; M. stenosis.	F.; liver enlarged; orthopnœa.	P + +	Nil.	Nil.	34	Cæsarean section; æther.	Marked.	Operative delivery.	Immediate result satisfactory; died 4 days later.
14	29	P.-gr.	—	M.S.	F.; urgent dyspnœa.	P +	Very poor.	In bed 3 months. See (*b*).	30	Undelivered.	—	—	Died suddenly. See (*g*).
15	35	7-para.	—	Double M.	F.	P +	Poor.	7 days; fair response.	36	Cæsarean section; gas and oxygen.	Slight.	Operative delivery.	Immediate result satisfactory; died. See (*h*)
16†	29	P.-gr.	—	,,	F.; heart much enlarged; orthopnœa.	P + +	Nil.	Several weeks in bed at home without response. See (*c*).	32	Spontaneous onset of prem. labour; delivery N.F.	Marked.	2	Died 2 hours after delivery.
17	20	1-para.	—	M.S.	F.; hæmoptysis; pulmonary œdema.	P + +	Very poor	5 months; fair response at first See (*d*).	39	Medicinal induc. of labour; delivery N.F.	Marked.	1	Died 12 hours after delivery.
18	36	1-para.	—	,,	F.; general anasarca.	P + +	Very poor.	7 weeks; temporary response only.	38	Undelivered.	—	—	Died suddenly before onset of labour.

† Case 16 received quinidine in October, 1922, and the fibrillation temporarily disappeared, but the abnormal rhythm returned in March, 1923, and the patient became pregnant two months later.

Parity.—P.-gr. = Primigravida. *Disease.*—M.S. & R. = Mitral stenosis and regurgitation.

Symptoms.—A.F. = Auricular fibrillation. *Heart failure (pregnancy).*—E. = Early. P. = Present.

Duration of in-patient treatment.—R.D. = Response to digitalis. (*a*) Month later heart again broke down. (*b*) In bed three months at home without response; intolerant to digitalis. (*c*) Too ill to move to hospital. (*d*) Not maintained in later months.

Method of delivery.—N.F. = Natural forces.

Heart failure (labour).—*Prolonged labour owing to difficult breech with extended legs.

Immediate result.—(*e*) Abortion induced; death 22 days after delivery. (*f*) Died undelivered two days later. (*g*) Died suddenly three days after admission before onset of labour. (*h*) Left hospital fairly well; died suddenly three months later.

of the lower lobes of the lungs; and although the subcostal angle is opened out, the lower ribs expanded, and the apical respiratory excursion shows enhanced movement as compensatory phenomena, yet, in spite of these adjustments, the expansion of the lungs is diminished. This applies to all pregnant women in some degree in the second half of pregnancy, but especially to primiparæ and to pregnancies complicated by hydramnios and twins, where the physiological tumour is unduly big. The effect of this pressure is shown by shortness of breath on exertion, and is demonstrated by the presence of crepitations at the pulmonary bases, which disappear in healthy women after a few deep breaths have been taken. The heart itself is dislocated upwards by the uterine tumour, which presses chiefly on the right ventricle.

The circulatory changes include a definite blood plethora, which is a physiological response to the increasing demands of the rapidly growing maternal and fœtal tissues. New vessels comprising the placental circulation increase the work of the heart by interposing an additional vascular field, whilst the pressure effects described above further increase the peripheral resistance by obstructing the venous return. The normal heart meets these demands by calling upon its reserve force, and the patient may be unaware of any limitation of cardiac efficiency—but some encroachment on reserve is always made, and the amount increases throughout pregnancy.

Labour.—The effects of labour are simply those of muscular effort which always imposes a strain on the heart and calls on the cardiac reserve. The strain is slight in easy normal deliveries, but may be very severe when labour is prolonged or delivery difficult.

Puerperium.—In all cases the contractions of the puerperal uterus empty and occlude the vessels of the placental site, and thereby inject an additional amount of blood into the maternal circulation, unless post-partum hæmorrhage occurs or the patient is deliberately bled (to prevent plethora).

Effect on the Abnormal Heart.

If the demands of normal pregnancy and labour inevitably call upon the reserve power of the heart, it is clear that the chief issue in any case of pregnancy with heart disease must depend upon the amount of reserve force left in the damaged organ. If this is considerable, then the strain of parturition may be easily overcome; if it is small, the outlook is serious, whilst the combination of pregnancy with actual heart failure—i.e., complete absence of reserve force—is always highly dangerous. That such is the case is strongly supported by the fact that out of 18 patients with auricular fibrillation in pregnancy whom I have observed, 13 died either before, during, or soon after delivery. All of these patients were suffering from heart failure and mitral stenosis, with an added aortic lesion in three cases. It should be noticed that the liaison of mitral stenosis and pregnancy is peculiarly apt to set up heart failure, because obstruction in the pulmonary circuit is produced by the valvular defect and also by the selective pressure effects of the pregnant uterus. It is, therefore, not surprising to find that the association of these two factors greatly enhances the action of each and exerts the most unfavourable and damaging pressure on the right side of the heart.

The accompanying table gives an analysis of the salient features of these 18 patients so arranged as to show the natural history of fibrillation during pregnancy, labour, and the puerperium, with the treatment, the method of delivery, and result of each case. It brings forward ample clinical proof of the truly malignant influence of parturition on the failing heart, and shows that the conduct of such cases requires the most careful consideration of both cardiologist and obstetrician.

The immediate treatment of the fibrillating or failing heart by rest and drugs of the digitalis group is well known and easily carried out, but the cardiologist has a much more difficult task to perform. The immediate response may be good, but it does not necessarily throw any light on the ultimate result, which depends essentially on the quality of the heart muscle and the amount of reserve power left in the damaged organ. The cardiologist alone can determine—perhaps it would be more accurate to say estimate—this unknown quantity; indeed, only the physician who has special facilities for the study of the effect of pregnancy and labour on heart disease can realise the difficulty of prognosis and be really helpful to the obstetrician who is faced with the grave responsibility of the delivery of the patient. Too much emphasis cannot be laid on the fact that the injurious effects of pregnancy are progressive and cumulative—insignificant, perhaps, in the early months or so long as the cardiac reserve holds out, but increasing, often rapidly, as term approaches and culminating in the supreme strain of labour. The cardiologist is thus confronted with a double problem: he must first estimate what is left of the cardiac reserve after allowing for the loads imposed by the valvular lesion and the rhythmic and other pathological changes that may be present, and he must then decide whether the progressive and cumulative demands of labour and the puerperium will, or will not, absorb all that is left of this reserve. The results published in the present paper demonstrate that a heart without reserve power is unable successfully to withstand the strain of parturition, and that the conduct and prognosis of all cases of heart disease and pregnancy are vitally dependant upon the presence or absence of heart failure.

Treatment of Heart Disease and Pregnancy.

(*a*) *Without Heart Failure.*—After full investigation of the heart and full allowance for the various cardiac loads, the pregnancy may be permitted to continue so long as the cardiologist estimates the reserve as satisfactory and the patient consents to remain under observation and supervision. If, at any time, the heart begins to show signs of diminishing and defective reserve, the pregnancy must be terminated before actual heart failure has supervened.

(*b*) *With Heart Failure.*—Unfortunately, a patient may become pregnant when her heart is imperfectly compensated, or she may develop heart failure before seeking advice, or even when under treatment. Under these circumstances the obstetrician is often advised to terminate the pregnancy forthwith. This, however, in my opinion is dangerous advice, because the combination of labour and heart failure is incompatible with the safety of the patient, and there can be no valid reason for submitting an already overburdened heart to an additional strain. The spontaneous onset of labour may be unavoidable, but the deliberate induction of labour is certainly unjustifiable when heart failure is present. The same principle applies to the early months of pregnancy, although the application is somewhat different; heart failure at this stage cannot be primarily due to the changes produced by conception because the circulatory and pressure effects are insignificant until the fifth or sixth months of gestation. Heart failure in early pregnancy is, therefore, very much less the result of the pregnancy itself than of other intrinsic causal factors, and although the uterus may possibly be emptied without disaster, this proceeding is not likely to have any immediately favourable effect on the failing heart, and is not worth the risk it undoubtedly entails.

On the contrary, every effort must be made to restore the compensation of the heart before the termination of the pregnancy is decided upon, but in view of the inevitability of the spontaneous onset of labour sooner or later, the importance of delivering the patient at the first favourable opportunity needs emphasising. In severe cases this moment has arrived when the patient is reported by the cardiologist to be in a condition to withstand the strain of Cæsarean section.

(*c*) *Control of Repeated Pregnancies.*—Although it may be fairly advanced that the first pregnancy and

labour produce the maximum muscular strain, and that subsequent labours are frequently short and easy, yet repeated pregnancies should be forbidden to all patients who have any heart lesion. There are many reasons for this view, but three only need be mentioned here: (1) muscular atony and degeneration are the common sequelæ of repeated pregnancy and lactation, even in healthy women; (2) many cardiac lesions are progressive processes—e.g., mitral stenosis; (3) recurrent endocarditis may be set up by the pregnant state.

This question is one that must be referred to the cardiologist, who may consider that the cardiac efficiency is so little impaired in any individual case that more than one pregnancy may be permitted to the patient. In any event, adequate spacing of the children is essential in order that the heart may be given ample time to recover from the strain of one pregnancy before being exposed to the effects of another.

(*d*) *Mode of Delivery.*—If the cardiac reserve is sufficient to enable the patient to play games and lead an active life when not pregnant—i.e., almost perfect—normal delivery at full term may be safely allowed; at the same time, the induction of premature labour and the use of forceps are always useful procedures, as they mean less work for the expelling muscles and, consequently, less strain on the heart. For cases in which the cardiac reserve is seriously reduced Cæsarean section is probably the least risky mode of delivery. This operation has many advantages.

1. The strain entailed by the anæsthetic is no greater (sometimes less) than the cardiac work demanded by the uterine contractions and the voluntary efforts of the accessory muscles, even when assisted by forceps traction.

2. It is the most rapid method.

3. It can be carried out deliberately at a chosen moment and under the most favourable conditions.

4. The amount of blood lost can be regulated and the puerperal plethora prevented.

5. It offers a certain method of sterilisation by excision of a portion of both Fallopian tubes, which conserves the regular menstrual loss (clearly an advantage to the cardiac subject)—a method which compares most favourably with the uncertainty of contraceptives and the disadvantages of the amenorrhœa induced by X rays.

Cæsarean section is specially indicated when the patient is a primipara or where there is some additional obstetrical complication, such as a contracted pelvis or an abnormal presentation. I have had personal experience of five operations for severe heart disease with good immediate recoveries, and am convinced that this method of delivery is the method of choice for many cases.

Conclusions.

The results tabulated in this paper show that heart failure is a dangerous complication in parturition and suggest that the rational basis for the treatment of heart disease and pregnancy depends upon three important facts: 1. Pregnancy and labour absorb the reserve power of the heart, and the amount of reserve force required increases as term approaches. 2. A woman with organic heart disease who becomes pregnant starts with a depleted cardiac reserve, which may or may not be sufficient for the inevitably increasing demands of the pregnant state. 3. Labour in the presence of severe heart failure is either immediately fatal, or greatly hastens the fatal termination of the case.

The principles of treatment may be summarised as follows: 1. A woman with serious depletion of the cardiac reserve should not become pregnant. 2. If conception occurs in the presence of seriously depleted reserve, the pregnancy ought to be terminated before the onset of heart failure. 3. The induction of labour in the presence of heart failure is unjustifiable. 4. Artificial termination of the pregnancy should be carried out when cardiac compensation has been re-established—and for many cases Cæsarean section is the best method of delivery.

DEATHS UNDER ANÆSTHETICS.

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THE reports of the Registrar-General on deaths under anæsthetics for the last few years contain statistics and remarks of considerable interest and deserve careful study. The following table is adapted from these reports; the statistics contained in it date from 1911, because a modified system of registration came into operation on that year:—

England and Wales. Deaths Under or Connected with the Administration of Anæsthetics.

In some of the death certificates the nature of the anæsthetic is not stated. The statistics are therefore grouped as "stated" and "unstated."

Year.	Number of deaths.						Anæsthetic stated, per cent. of total.	Per cent. of total stated.			
	Total.	Nature of anæsthetic.		Chloroform.		No chloroform.		Chloroform (alone).	Chloroform in combination.	Ether.*	Other anæsthetics
		Stated.	Unstated.	Alone.	In combination.						
1911	276	214	62	142	46	26	78	66	22	9	3
1912	283	181	102	117	31	33	64	65	17	13	5
1913	296	185	111	110	33	42	63	59	18	14	9
1914	300	193	107	110	36	47	64	57	19	18	6
1915	261	171	90	102	39	30	66	60	23	15	2
1916	306	200	106	112	52	36	65	56	26	14	4
1917	280	196	84	106	59	31	70	54	30	11	5
1918	279	188	91	81	61	46	67	43	32	18	7
1919	302	232	70	96	74	62	77	41	32	21	6
1920	366	282	84	96	95	91	77	34	34	26	6
1921	337	264	73	82	87	95	78	31	33	27	9
1922	336	260	76	63	93	104	77	24	36	30	10
1923	446	392	54	87	148	157	88	22	37	32	9

* Including "ethanasol" and "gas and ether."

Increase in Total Number of Deaths.

The yearly number of these deaths increased suddenly in 1920 to 366, and this increase has been sustained. In 1923 there was a great increase to 446.[1] In explanation of this increase the report for 1923 suggests that there may be included in recent years an increasing number of deaths not actually connected with the anæsthetics, because the certification of deaths is steadily becoming more detailed. I rather doubt if this slowly acting cause could account for the sudden rises noted, and further there exists a well-recognised and growing tendency to omit the mention of the administration of an anæsthetic in death certificates whenever possible. I do not think that this argument can be admitted in relation to the registration of anæsthetics.

We do, however, have to take into consideration the yearly increase in the number of operations during the period under consideration. This increase is computed at 13 per cent. from the theatre statistics of a large general hospital in London. It must also be noted that deaths from delayed anæsthetic poisoning and acidosis are first returned as such in the year 1919; possibly, but not certainly, these help to swell the total. These cases would not account for more than a 5 per cent. increase at a liberal computation.

The foregoing considerations barely account for the 22 per cent. rise in the number of deaths in the period 1911–22, and are totally inadequate to account for the 62 per cent. rise in 1923. I think, therefore, we must conclude that up to the present moment little or nothing has been effected in the progress of years, either through the medium of new knowledge or new methods, in the way of reducing the general liability to death under anæsthetics.

Chloroform.—In the earliest years of this century deaths under chloroform constituted over 80 per cent.

[1] The report for 1924 has now been published. The total number of deaths in that year was 429.

of the total number. The fall to 22 per cent. has no doubt been largely conditioned by the substitution of chloroform and ether mixtures, and sequences of these, for pure chloroform, the tendency in later years being to avoid the use of pure chloroform. The possibility is not excluded that the mortality-rate from the use of pure chloroform may be diminishing, but on this point there is no definite evidence available.

Chloroform in Combination.—Before 1911 the average percentage of deaths under this heading was 7 per cent. The rise is evidently correlated with the increased employment of chloroform in mixtures, and Hewitt and Blomfield's [2] paper, published in 1909, stands out as a boundary mark in this connexion. At the present time chloroform in combination accounts for more deaths than any other form of anæsthetic.

An analysis of the deaths under this heading may be of interest. In 1923 out of 144 deaths recorded of this nature, nine occurred under a chloroform to ether sequence, 11 under a C.E. or A.C.E. mixture to ether sequence, and the remaining 124 under C.E. mixtures of varying proportions. There were none recorded under an ether to chloroform sequence. Up to 1917 the combined "chloroform" and "chloroform in combination" percentages remained fairly constant, the average being 83 per cent. of the total, but thereafter these combined percentages gradually fell away to 59 per cent. It might, therefore, be considered that combinations and sequences are now tending in some measure to increased safety. I do not think that this would be a correct interpretation; the deficiency balance is transferred mainly to the heading "deaths under ether," and the following considerations bear upon this point.

Ether.—In 1911 the percentage of deaths under ether was 9 per cent., and the average for previous years was somewhat lower. In 1923 it had risen to 32 per cent. In my student days, about 1890, ether administered by means of the Clover's inhaler was regarded as a practically safe anæsthetic; the few deaths that occurred under its influence were mainly the result of regurgitation of fluid in intestinal obstruction or of other unavoidable accidents. With the advent of the extended employment of the "open ether" methods it has become, according to these statistics, an agent of remarkable lethal potentiality. In 1923 no less than 123 deaths were recorded from the use of pure ether. How can we account for this?

I have examined the records of these 123 cases; they were cases such as would occur in the ordinary routine of hospital operations, many being trivial; it follows that an undue proportion of very serious operations was not a conditioning factor. That there have been incidents of sudden cardiac syncope under the administration of pure ether can hardly be doubted; their explanation is obscure, and their recorded occurrence has been exceedingly rare. It is not possible to believe that such incidents can have multiplied to an alarming degree in recent years.

There appears to me to be only one acceptable interpretation of the rise in the number of deaths under ether, and that is that the death certificates have been incompletely filled in. Owing to a certain element of delay in the induction of anæsthesia by ether when administered by the "open" method, it is a very general practice to commence the induction with chloroform or C.E. mixture and then to change to pure ether; such a routine administration is liable to be returned as one of "open ether" or "ether," and no mention made of the preceding, and possibly brief, administration of chloroform.

In 1923 there were only 20 deaths recorded under a chloroform or C.E. to ether sequence, and 123 under pure ether. Having regard to the prevalence of the sequence method, these figures lend strong support to the theory that the returns are erroneously rendered. There can be little doubt that a large proportion of these "ether" deaths should be transferred to the category of deaths under "chloroform in combination."

Conclusion.

It is, I believe, commonly considered that chloroform is rendered "safe" by diluting it with ether, and that a small amount of chloroform at the commencement of an administration of ether is of no consideration. In both of these circumstances chloroform tends to become, in my view, unsafe for general routine purposes. At least the reports of the Registrar-General serve to dispel the idea that chloroform is safe when employed under such conditions. The pros and cons of this matter might, I am aware, be discussed at considerable length, but I think it better to leave the foregoing record of facts and brief comments to the consideration of those interested.

I have to express my thanks to the Registrar-General for access to statistical material in his office.

[2] A Report on the Routine Use of the Open Method of a Mixture of Chloroform and Ether. By F. W. Hewitt and J. Blomfield, THE LANCET, 1909, ii., 10.

A CASE OF SPONDYLITIS DEFORMANS WITH MYOSITIS OSSIFICANS.

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THE interest in this case appears to be (1) the difficulty of diagnosis in the earlier stages, (2) the extreme rarity of the concomitance of two in themselves rare diseases, and (3) the perfect symmetry of the ossifacient changes.

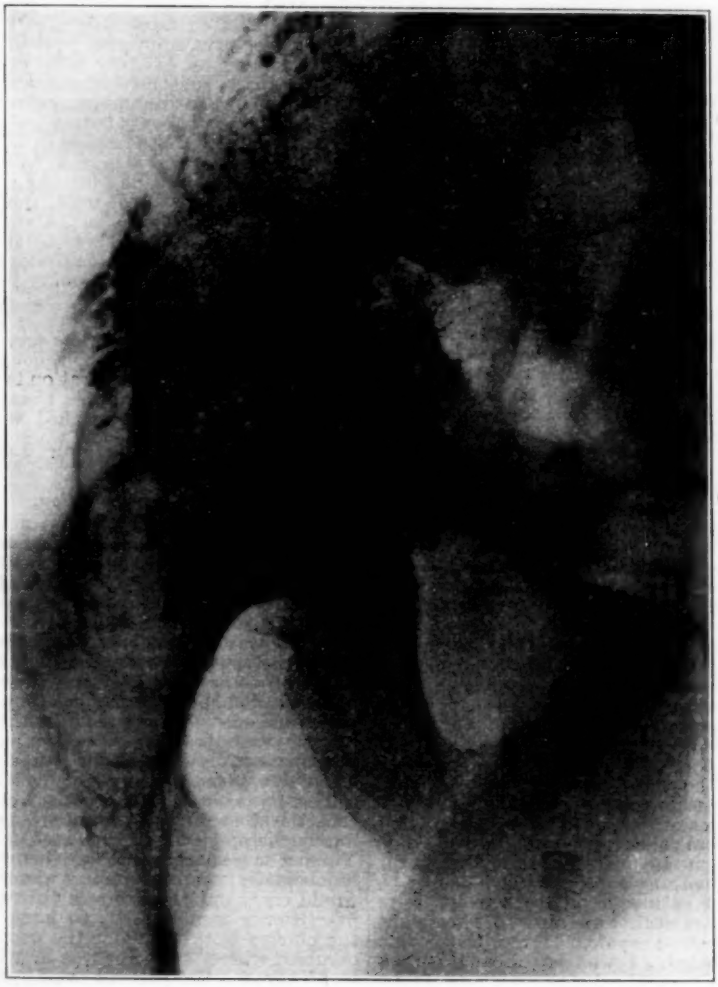
A. B., a seaman aged 27 years, was first seen by Dr. J. Murray Bligh on Oct. 26th, 1920, suffering from pain and stiffness in the back of the neck, and pain on pressure over the ribs. His mother was English and his father Italian by birth, although his (the father's) father was a Jugo-Slav who had married an Italian wife. There was no history of any family abnormality of any kind or of dystocia when the patient was born. He could recall no accident or undue strain prior to the onset of symptoms, but gave a history of "rheumatic pains" flitting from joint to joint in 1918 and 1919. He was much exposed to the weather at sea the following winter (1919–20), when he found it painful to move the cervical spine and to jump from one level to another, as this caused jarring in the occipital region. The pain was dispelled by aspirin and any liniment. At that time an X ray examination of the neck proved negative. Six months before the first examination, that is, in May, 1920, he had contracted gonorrhœa in France, so that the provisional diagnosis of gonococcal arthritis was made. The patient had great pain in the left temporal, occipital, and clavicular regions in 1921. The gonorrhœa was treated in America, and urethral smears were negative in 1922 (Liverpool and Philadelphia).

Condition on Admission.—On July 24th, 1925, the patient was admitted to hospital after getting gradually worse. His head was held facing half-right, there was complete "poker-back," and an inability to sit down. Crutches had to be used for locomotion and standing, and in order to lie on a bed from the standing position the patient had purposely to overbalance. The shoulders, elbows, wrists, and hand-joints were normal, but the hips were immobilised and the knees could not be flexed more than 60 degrees from the straight position. The ankle- and foot-joints were normal. The chest expansion was only from 30½ in. to 31½ in. The blood pressure was 145/120, and the Wassermann reaction was negative. Radiograms taken about this time show apparent fusion of the articular processes in the cervical and other regions of the spine with some ossification in the cervical portion of the anterior common ligament, an absence of bone changes at the shoulder-joints (the hip-joints cannot be clearly seen), and perfectly symmetrical myositis ossificans of the glutei maximi (well shown on the accompanying radiogram). No other groups of muscles were similarly affected, and the hands and feet were normal. Urethral smears were negative for gonococci, an injection of 2½ millions gonococci produced neither local nor general reaction, and the gonorrhœal test was negative.

The blood calcium was only 9·3 mg. per 100 c.cm. It was considered inadvisable to excise the ossified parts in view of the important structures in the gluteal regions, and the possibility that from long fixation the hip-joints were

functionless. Treatment has consisted in the exhibition of iodine in many forms, in massage, and exercises. The head at present can be bent laterally about 5 degrees and turned similarly. All the spine can be moved very slightly indeed, even with great and prolonged exertion on the part of the patient, but the knees can be flexed to 90 degrees—i.e., the patient can kneel. The temperature, pulse, and respiration have throughout remained normal.

Spondylitis deformans and its varieties have several synonyms—spondylose rhizomélique, von Bechterew's disease, and Marie-Strümpell's disease. It can be divided [1] into two main types, (*a*) diffuse osteo-arthritis of the spine, and (*b*) diffuse ankylosing arthropathy. The former is a comparatively slight disease, but the latter more serious. It occurs between the ages of 20 and 40 years and affects the intervertebral discs, thus producing ankylosis. New bone formation often occurs in the anterior common ligament. In Marie-Strümpell's disease the lumbar spine is first affected and in von Bechterew's [2] the cervical, whilst in the spondylose rhizomélique of Marie the spine is affected with the hip- and shoulder-joints. In any group, if ankylosis precedes the destruction of the discs, "poker-back" is produced, but where the reverse is the case the "aged-rustic-back." In the 120 cases discussed by McCrae [3] 60 involved the spine alone and 60 the peripheral joints also; 80 per cent. of the cases were in males. Jones and Lovett [4] discuss the importance of gonorrhœa in the ætiology.



The first case of *myositis ossificans* was described by Guy Patin in 1692, and the second by Freke in 1740.[5] The disease is subdivided into two distinct groups, (*a*) traumatica, with local changes due to the tearing away of osteogenetic tissue, and (*b*) progressiva. This is frequently described as congenital, and Burton-Fanning has reported an hereditary case.[6] Of Lorenz's 45 cases, 38 occurred before the fifteenth year and 11 in the first year of life.

The sex incidence shows that males are affected four or five times more frequently than females, and the race [7] incidence that the great majority of cases occur among the Anglo-Germanic peoples. Munchmeyer first described the pathology in 1869, but concerning this there appears to be no general agreement at the present time, some authorities regarding the condition as a neoplastic occurrence, others as an embryonic aberration, and others as due to chronic inflammation. They are agreed, however, that in all, or almost all, of the general cases microdactylia occurs in the hands or feet, especially the big toes, "due to suppression of the proximal phalanx or stunted first and second phalanges." Less often there is a similar malformation of the thumbs.[8] In 1918 Rosenstirn collected and analysed all the published cases, 120 in all.[9] In only one case can it be proved that microdactylia was absent.[10] Burgerhout carried out extensive researches into the metabolism of patients with the disease, but could find no definite abnormality.[11] In his conclusions Rosenstirn suggests the renaming of the general disease as fibro-cellulitis ossificans progressiva, as it is in the fibrous tissue that the earliest changes occur. He is satisfied that in M. ossificans traumatica the ossification first takes place in the connective tissue surrounding the extravasated blood, that there is no diminution in the Ca excretion nor other evidence of Ca retention. In the case now reported it is not considered clear to which group the patient belongs.

I am indebted to Dr. J. Murray Bligh, senior physician of the David Lewis Northern Hospital, Liverpool, for permission to publish these notes and to Dr. W. Oram for his assistance with the radiography.

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THE PREVENTIVE TREATMENT OF SUMMER DIARRHŒA.

ROUTINE MEASURES IN THE HOME.

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MY object in bringing this subject before the notice of the profession during the winter months is to allow time for the proper organisation of preventive measures before the hot weather commences. It is essential for the success of the treatment that an adequate scheme should be in existence at any rate before June.

The infant welfare movement has, no doubt, done a great work in educating the public and also the medical profession in the proper feeding and general hygiene of infancy and early childhood, but much remains to be done amongst those who do not avail themselves of the advice which can be obtained at these centres. Gastro-enteritis, zymotic enteritis, or whatever name we like to give the condition, still claims too high a death-rate between June and September during the first two years of life. The disease chiefly affects children living in large towns. Amongst those who recover we must not forget the "injury-rate" that occurs in many instances and which interferes with growth and nutrition for many months afterwards.

The hospital authorities are all agreed that the cases are sent to them too late and that treatment should be begun much earlier. The bacteriologist has failed to isolate any specific micro-organism after many years' patient search. He tells us that there is an enormous increase of organism that normally inhabit the bowel, and that the child dies of an infection from the bowel. The pathologist can usually find nothing noteworthy except fatty degeneration of the liver; the intestines which have been subjected to very severe treatment usually show no marked signs of disease.

The clinician, therefore, must depend on himself entirely; he cannot expect any practical suggestions from the laboratory expert. The clinician must, therefore, concentrate on the child rather than on the disease; he must devise some method by which the body can quickly recover itself from the first onslaught of the enemy, and then give some form of nourishment which should be the least irritating and that should, at the same time, contain sufficient nourishment to satisfy the caloric requirements of the child after recovering from the initial shock. This is, roughly, the problem before us. It was felt in Kensington that something more should be done to diminish the number of moribund cases which were being sent to the hospital, and also to lessen the injury to the digestive system after the acute symptoms had subsided. I was asked to devise a scheme for treatment in the home which could be easily carried out and which would be helpful to the general practitioner in the neighbourhood.

Ætiology.

The literature on this subject is vast, and anyone wishing to become acquainted with it could not do better than consult the bibliography at the end of Dr. Donald Paterson and Dr. D. Nabarro's paper on epidemic diarrhœa which appeared in THE LANCET of 1922, ii., 325. The theories of Czerny and Finkelstein at one time occupied a prominent place in the causation of infective diarrhœa. They thought that the chemical action of food and its decomposition products were a sufficient cause for summer diarrhœa, rather than the action of bacteria. Theories based on the chemical action of food products have given place to the infective theory again, and in 1920 Dr. Bloch, of Copenhagen, pointed out that the clinical picture, pathological findings, and the epidemicity are the same whether we find pathogenic organisms or not. His classification is as follows. (1) acute dyspepsia due to food indiscretion; (2) acute gastro-enteritis in healthy children; (3) acute gastro-enteritis complicated by chronic dyspepsia; (4) symptomatic diarrhœa, in which diarrhœa is merely an incident in a disease outside the digestive system. During the summer months the first group passes into the second and third groups: there is no hard-and-fast division between them. I must say from my own personal experience during the last three years I find this classification very helpful.

As regards diagnosis, we must, of course, be quite sure that we are not dealing with some septic focus which will often cause diarrhœa in a child, such as discharging ears, empyema, pyelitis, &c. Overfeeding is the commonest exciting cause of summer diarrhœa. Other causes, such as contamination of food-supply, bad hygienic surroundings, overclothing must also be considered as contributory causes. A child will often cry and become restless in hot weather because it wants a drink of water so as to make good the loss of fluid by perspiration; instead of giving water the mother gives a drink of milk, thus the condition of overfeeding is made worse. A child in hot weather requires less food than it was having in cool weather. When the next feeding-time comes round the mother, thinking that the child is hungry because it is fretful, gives another feed of milk, and so the condition is made worse, and Nature brings relief by causing vomiting and diarrhœa. The loss of fluid from the body very rapidly produces a condition of dehydration, and unless this dehydration is promptly relieved the child may die from this cause alone before the stage of intoxication is reached with high temperature. I felt certain that if we got hold of the case during the early stage there would be some hope for treatment to be effective.

Notification.

Zymotic enteritis has been a notifiable disease for some years in seven of the London boroughs, but treatment by the health authority has not been suggested in any part of England or Wales. The administrative side of the work was in the hands of Dr. J. Fenton, the medical officer of health. Zymotic enteritis was made a notifiable disease for children under the age of 5 years on July 1st, 1924.

Directly the notification was received a health visitor called at the home and took notes of the case on a card specially prepared for the purpose. If the patient was already under the care of a medical practitioner and he wished to continue attending and did not require any nursing assistance, nothing further was done. If, however, the visitor found that the doctor in attendance wished to have some nursing help, the visitor would telephone to the District Nursing Association, asking them to send someone immediately, and the nurses under these conditions would carry out the doctor's orders. Sometimes the practitioner would prefer to hand over the case to the officers working under the council. Other cases occurred where no doctor was in attendance or likely to be because the parents could not pay a fee. My services were requisitioned during the summer months to see all notified cases who were not receiving medical attention. The administration was therefore simple and worked admirably. There have been no complaints from medical practitioners in the neighbourhood; in fact, during the last year several doctors have asked the nurses to carry out the routine treatment in many of their cases. The district nurses tell me that during the last year the great majority of the cases have been notified within the first 24 hours of the commencement of the disease.

Symptoms.

The disease began in the usual way quite suddenly with vomiting and diarrhœa. The children attacked could, roughly, be divided into two classes: (1) those apparently quite healthy, and (2) the ill-nourished child under weight for its age, and already suffering from chronic digestive disturbance. The degree of collapse was usually dependent on the frequency of vomiting. The sunken eyes, depressed fontanelle, and scaphoid abdomen and restlessness were well

marked in all cases suffering from dehydration. The clinical picture was that of an acute dyspepsia in the majority of cases.

Temperature.—Some cases had no fever, whilst in others the temperature varied from 100° to 102° F., and sometimes it rose to 104°.

Stools.—These were usually green, offensive, and very watery; in a few cases small spots of blood were seen mixed with mucus. The number of stools varied between four and ten a day. The skin remained elastic in all the cases that I saw. There were no cases with symptoms of acidosis. The stage of intoxication was reached on the third or fourth day in the few instances where I was asked to see the patient. Fortunately they did not prove fatal. In these cases the commencement of treatment had been delayed.

Treatment.

Two or three meetings were held at which I explained the plan of treatment to the health visitors, district nurses, and superintendents of infant welfare centres, also the superintendent of St. Mary Abbot's Hospital, Dr. Remington Hobbs. The method of treatment is very similar in outline to the one suggested by Dr. Donald Paterson in a lecture he gave in 1923. It consists in absolute starvation for at least 24 hours, and, when the vomiting had subsided, normal saline half the usual strength—namely, half a teaspoonful of salt to the pint of water—was to be given to the child in bottlesful cold, and the child allowed to drink as much as he wanted. Some children took over two pints a day. One teaspoonful of castor oil was to be given when the vomiting had subsided, and this was the only drug administered. At the same time the intestine was to be washed out with saline, and this was to be continued once a day while the diarrhœa lasted. The next day the child must be given food which it can digest. In this condition any food having a high protein and a low fat content is suitable, such as skimmed dry milk, protein milk, or malted milk. On the whole I found that malted milk was better tolerated than skimmed milk during the acute stage, so I advised the nurses to take a bottle of malted milk next day and to tell the mothers to give two teaspoonfuls of malted milk in 2 oz. of water every three hours in cases where the infant was under 3 months, when over 3 months 3 oz. of the food was to be given, and in cases where this amount was tolerated and the child not satisfied the quantity could be increased a teaspoonful a day more of the malted milk with an ounce of water. There were very few instances where the food was vomited. Three teaspoonfuls of malted milk contain about 45 calories, so that an infant would receive, if fed three-hourly, 270 calories per diem. Windows and doors were to be kept open during the hot weather. Light clothing only to be put on the child. Tepid sponging was not advised because it would cause unnecessary movement.

Results of Treatment.

I got the best results when malted milk was given for at least five days or until symptoms of acute dyspepsia had subsided. On no account should the food-supply be diminished, provided there is no vomiting, even in cases where the diarrhœa continues. I would even go so far as to say that the diarrhœa by itself was of little account provided the child was improving and taking its food well and having plenty of water between the feeds. In most cases the diarrhœa gradually subsided and the motions became less offensive, provided a rectal wash-out was done daily. The effect of the saline by the mouth in reducing the shock and collapse was surprising. The eyes became less sunken, and the abdomen returned to its normal shape in about two days. If the diarrhœa continued after about ten days I gave some bismuth. No opium or alcohol was used. Cases of high temperature did well on this treatment. No drugs were given to reduce it.

Feeding.

The return to normal feeding was the real difficulty. It is impossible to give a detailed description of the various methods employed in individual cases, but I was greatly struck by the desire of the mothers themselves to carry out the instruction which they received. Any plan for adoption in the home must be of the simplest description, or else it is sure to fail.

I gave instructions that in all cases where the child was doing well, and had been on malted milk for a week, ten drops of cow's milk should be added to the malted milk in each feed, if no symptoms of indigestion occurred, the next day 20 drops were to be given, and the day after one teaspoonful in each feed. If all went well up to this point a teaspoonful more of cow's milk was added every day until as much as 1 oz. of cow's milk was given. At this stage the malted milk was reduced one teaspoonful at a time for every ounce of milk added. Eventually we got to a diluted milk mixture with half a teaspoonful of sugar, and, lastly, cod liver oil in one drop doses and the effect carefully watched; if it caused vomiting it has to be omitted for a few days and then tried again, the amount of cod-liver oil never to exceed three drops in each feed. The difficulty in digesting fat is peculiar to these cases. This régime can be carried out by the mother with the nurse's supervision. In cases of difficulty I was asked to see the patient.

It is interesting to note that even in the case of breast-fed infants it is necessary, after 24 hours' starvation and salt water, to give malted milk during the first three days. The mother during this period must be encouraged to massage her breast so as to keep the secretion active. After the three days, or when acute symptoms have subsided, the child can again be fed on breast milk. We had difficulty in some cases to persuade the mothers to resume breast-feeding. Some children could not digest ordinary cow's milk, but did well on dry milk mixtures. The malted milk was supplied free by the council as a temporary measure under medical supervision.

Prognosis.

What influences the prognosis more than anything is the time that elapses between the onset of symptoms and the commencement of treatment. If the treatment is delayed beyond 24 hours the prognosis is far more serious, not only as regards the life of the child, but also the amount of injury done to the digestive system.

Inspection after Treatment.

I visited the cases who had received treatment, after the summer was over in each year, and the majority were doing well. A few had been admitted to hospitals, and these were usually the under-weight infants. Some had done much better since the attack, with the resulting supervision of their diet.

I am indebted to Dr. Fenton for the following figures. The number of deaths in infants under the age of 1 year attributable to zymotic enteritis in the borough during the last five years:—

1921	77 deaths.	1924	18 deaths.
1922	22 ,,	1925	22 ,,
1923	42 ,,		

Number of notifications of zymotic enteritis since July 1st, 1924, were 245. In 1924 there were 40. In 1925 there were 122. In 1926, 83. The death-rate in 1926 up to Sept. 30th, amongst 83 notified cases of zymotic enteritis was only six. The death-rate in 1926 from all causes of enteritis was 28 up to Sept. 30th.

During the last three years the number of cases attended by the District Nursing Association of Kensington was 187. Among these 187 cases there were only two deaths. I only sent one case into hospital during the three years. The last time the disease showed itself in epidemic form was 1921. Since then there have been no epidemics, but it is encouraging to see that the death-rate from zymotic enteritis has been so appreciably diminished during the last year. The last two summers have certainly been warmer than 1924, so that I think the scheme has been tested. The educational influence of the council's scheme is beginning to have a marked effect on the population of North Kensington, because they see the excellent results of early treatment, and they

have begun to realise the importance of early notification and absolute starvation.

The Health Visitors' Notes, 1924–26.

The number of cases visited was 216. Of these cases 119 were under 1 year of age, and 97 were 1 year and over. The number of families in which the patient was the only case was 197. The number of families in which more than one case occurred was 11. The number of healthy children attacked was 129. Children who were under the normal weight for their age and suffering from chronic digestive disturbances numbered 66.

Food on which the Children were Fed.—Breast only, 33; breast and Nestlé's, 5; breast and Cow and Gate, 2; breast and Ambrosia, 3; breast and Glaxo, 1; breast and cow's, 5; breast and Robb's biscuit, 1; cow's milk and Ambrosia, 1; Nestlé's milk, 13; cow's milk, 51; Glaxo, 6; mixed diet, 75; Ambrosia, 1; Almata, 1; Allenbury, 1; Cow and Gate, 1. Mixed diet means that a child was having ordinary food, consisting generally of three meals of cow's milk, crust or bread-and-butter, and a midday meal of gravy and bread or potatoes and milk pudding. The ages would vary from 8 months to 2 or 3 years.

Infection.

The question whether these cases infect one another has often been raised. On examination of the present series it would appear that the great majority were not infective, but in some instances where there were several cases in the same house or the same family, and particularly when death occurred, there is a chance of infection having been conveyed by fæcal matter. An interesting paper on the communication of diarrhœa from the sick to the healthy was read before the Epidemiological Section of the Royal Society of Medicine by Dr. J. E. Sandilands, the former medical officer of health for Kensington, in 1909. He gave evidence in his paper amounting to proof that certain fatal forms of summer diarrhœa are communicable. Nevertheless, he says:

"Communicability is by no means a conspicuous feature of epidemic diarrhœa in every case. Thus in 19 out of 35 tenement houses in Kensington where deaths were registered as due to diarrhœa no other cases occurred. Again, in 25 out of 35 fatal cases of diarrhœa no source of infection was found in the families occupying the houses where these patients died. And, lastly, in 22 families containing young children fatal diarrhœa occurred, and yet in these families 44 parents and 58 children were intimately exposed to infection without falling ill. In five hospitals there is no evidence of the spread of diarrhœa from patient to patient, and the sum of the evidence suggests that diarrhœa is not more infectious than typhoid fever, and is not conveyed except by the same channels."

In order to obviate contamination of food the mothers were told to wash their hands after touching soiled napkins.

Conclusions.

1. I think I have shown that it is easy to organise a scheme for early treatment of zymotic enteritis in large towns, and so relieve the pressure on our hospitals and reduce the number of moribund cases sent to these institutions. 2. The results of early treatment are excellent; and the return to normal feeding is made far easier if the case is seen and treated early. 3. I think this scheme may prove to be a useful addition to the public health service of the country.

I am greatly indebted to the District Nursing Association of Kensington for their enthusiasm in their work, also to the official health visitors and superintendents of infant welfare centres.

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Clinical and Laboratory Notes.

THE SCHICK TEST IN SCHOOL PRACTICE.

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IN a small outbreak of clinical diphtheria occurring in a school-house, when three boys and the matron were affected, the source of the outbreak was traced to a boy who had been at home on leave, and while there had associated with an established diphtheria contact, whose throat-swab was reported negative. A swab from the throat of the returned boy was reported negative on March 31st, positive on April 8th. Thirty-five boys, aged between 14 and 18 years, and 15 adults were then submitted to the Schick test (Burroughs Wellcome outfit), but no attempt was made to immunise the contacts with toxin-antitoxin mixture.

Case	Date of previous—		Schick test March 31	Result of throat-swab.		
	Attack.	Prophylactic treatment.		March 31	April 8	April 13
1	1921	..	−	+	−	−
2	1920	..	+	+	−	−
3	1921	..	−	−	−	..
4	1904	..	−	−	−	..
5	1899	..	+	−	−	..
6	..	1921	+	−	−	..
7	..	1922	+	−	−	..
8	..	1912	−	−	−	..
9	..	1914	−	−	−	..

All 50 were injected concurrently, 1 minim of freshly diluted toxin being injected intradermally over the flexor aspect of the left forearm, a similar injection of sterilised toxin in the right forearm serving as control. Throat-swabs were taken at the same time. The arms were inspected 72 and 96 hours later. In 19 cases the Schick reaction was positive, in 26 cases negative, and in 5 cases dubious. Five boys gave a history of previous diphtheritic infection and four of prophylactic treatment.

(Cases 1 and 2 in which the throat-swabs were positive had been in close contact with the clinical cases.)

Of the 19 positive reactors, 5 had positive throat-swabs; in 1 the first swab was negative and the second positive, 1 was sent home at the request of the parents, in 3 the organisms were found to be avirulent. Two of these cases having chronic follicular tonsillitis, all were repeatedly found clear of diphtheria bacilli after the second swab.

Of the 31 negative reactors, 7 (of whom 3 were in close contact with the clinical cases) had positive throat-swabs, 6 had no further positive swabs after seven days and repeated investigations, in 1 the organisms were found to be avirulent.

The negative reactors with negative throat-swabs were sent back to school. The positive reactors with negative throat-swabs were each given 1500 units of antidiphtheria serum. The positive reactors with positive throat-swabs were given 6000 units of serum and were isolated until two throat-swabs had proved negative, a virulence test being done if the third was positive. There were no further cases.

The lessons to be drawn from this small outbreak are that the Schick test is reliable for determining

immunity to diphtheria, that a previous attack of diphtheria or prophylaxis does not always give a negative reactor although it confers immunity, that repeated throat-swabs are necessary, that a virulence test is required to clear up all carriers, and that a school population can be dealt with safely and with little disturbance of school routine.

AN UNUSUAL COMPLICATION OF MASTOIDITIS.

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THE three following cases illustrate a complication of mastoiditis that adds considerably to the difficulties of diagnosis.

Differential Diagnosis.

The diagnosis between mastoiditis and furuncle of the meatus is usually easy, but if the pus from the mastoid breaks through the posterior bony wall of the meatus and pushes the membranous lining forwards into the meatal lumen the signs and symptoms of a furuncle will be imitated; the meatus is blocked by a tender swelling, the membrane cannot be seen, there is tenderness on pressing the tragus or moving the pinna, and there may be pain during mastication. At the same time the "classical signs" of mastoiditis (which, like most classical signs, are evidence of advanced disease) may be absent, partly because the pus has already made exit deeply, partly because of factors to be considered later; there is little tenderness or swelling over the mastoid process, and, as the pus lies behind the meatus, which can yield to the pressure, there will not be the deep, boring pain usually associated with mastoiditis. For the same reason the swelling is not so tender or so painful as a true furuncle, which is confined to the tightly bound skin of the meatal wall. This is the first point that should give a hint as to the true nature of the condition.

The second point in the diagnosis is that the swelling, at first at any rate, is deeper in the meatus than a furuncle has any right to be, for a furuncle is an infection of the meatal sebaceous glands, and these do not extend beyond the cartilaginous meatus. The third point is that the patient is more obviously a sick man than he should be from the apparent condition.

Clinical Histories.

CASE 1.—A German prisoner-of-war aged 37. Four days "earache" following a severe cold. The meatus was blocked by a tender fluctuating swelling. It was rather deep, and not quite as tender as a furuncle usually is, but there was pain on mastication, pain on compressing the tragus or moving the pinna, no mastoid tenderness or œdema. Temp. 100° F., pulse 98. The abscess was opened and pain was relieved, but the temperature did not settle, and three days later there was still a free discharge, and the patient looked a very sick man. The membrane could not be seen. Hearing was slightly diminished, but not more so than could have been explained by the meatal blockage. The mastoid was explored and a deep, high antrum, full of pus, was discovered. There was an overlapping middle fossa and a forward lateral sinus. From a cell below the antrum a fistulous tract opened through the posterior meatal wall. The membrane appeared to be intact. He recovered with normal hearing.

CASE 2.—A business man aged 30. A vague history of "earaches" in childhood and a week's history of pain in the right ear. A tender, fluctuating swelling—except that it lay rather deeply and was not quite as tender as usual, a typical furuncle—partially occluded the meatus. The membrane could not be seen fully, but appeared intact. There was no mastoid tenderness, no deafness (low tone limit 16 d.v.), and normal temperature. As he was very anxious to return to his work I opened the abscess under local anæsthesia. He felt considerable relief, and when he returned to be dressed next day said he was quite comfortable. Three days later, when sitting in a chair, he had a severe attack of vertigo and fell on to his left side. He went to bed and was seen by me the next day. The temperature and pulse were normal, there was no tenderness over the mastoid, but he had all the signs of a labyrinth fistula. It was quite clear that there must be some deep extension so the mastoid was explored. The antrum was deep and high, the middle fossa overlapped, and there was a fistula from a cell below the antrum through the posterior meatal wall. In the antrum itself there was a small cholesteatoma which had eroded the torus of the horizontal canal. Gentle pressure with wool on the erosion caused typical forced movements of the eyes. As the cholesteatoma did not extend into the attic there was no need to do more than drain the antrum. The patient recovered with normal hearing, and the labyrinth fistula gave no further trouble. When the swelling of the meatus subsided the membrane appeared intact except for one doubtful area that might have been an old scar.

CASE 3.—A boy aged 12. Pain and swelling in the ear with discharge. When he was seen, within 24 hours of the attack, there was a swelling in the meatus near the roof and rather deep. Pus was exuding from this. Temp. 100·2° F., pulse 90. No swelling over the mastoid, although there was a definite history of a transient swelling in the early stage of the attack that had pushed the ear forward; very slight mastoid tenderness. The position of the meatal swelling aroused suspicions, and when it was incised rough bone could be felt with a probe. The mastoid was explored. The apical cell was perfectly clear, the cells above it were filled with blood-stained fluid and laked pus, the bone was softened, and a track was found through the posterior meatal wall. There was a high, deep antrum full of blood-stained fluid with a thickened, necrotic lining. He made a good recovery with intact hearing, but there was some difficulty in getting complete healing of the operation incision. It eventually yielded to two doses of ionisation by Mr. T. B. Jobson. There was an old, healed scar on the membrane.

Commentary.

The three cases have these points in common: 1. A mastoid infection without evidence of concurrent acute otitis media. 2. A fistula through the posterior bony wall of the meatus. 3. A high and deep antrum. In every case the pus reached the meatus through the cells below the antrum, the route described by Lermoyez, who points out that this chain of cells, the "cellules limitrophes," is the most constant of all the groups.

With regard to the integrity of the membrane in these three cases it is interesting to note that in a recent series of 18 cases of acute mastoiditis without middle-ear symptoms described by Beeger there was necrosis of the posterior wall in four, and in four others there was sufficient swelling of the meatus to render the membrane invisible.

MASSIVE COLLAPSE OF THE LUNGS COMPLICATING A CASE OF ACUTE MENINGITIS.

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THE following case is interesting owing to the relative rarity of the condition.

The patient, a well-developed and previously healthy young man aged 18, was seen in consultation with Dr. C. Moffatt, of Irlam, on Oct. 30th, 1926.

He had been perfectly well until the previous Wednesday, when he was seized with severe pain in the head. On Thursday he got up, but did not go to work, and on Friday there developed pain in the back of the neck, and the patient felt that he was unable to "rise or do anything." During the later part of Friday and on Saturday morning some difficulty in breathing developed, which was accentuated by any attempt at movement and by coughing. This difficulty was described by the patient as a feeling as though the chest were being tightly gripped. During Friday and Saturday the temperature was between 100° and 101° F.

I saw him about 4 P.M. on Saturday. He was lying comfortably on his back with the head partially raised on pillows. There was marked cyanosis of the face and lips, and evident respiratory embarrassment of moderate degree. The mentality was clear, the temperature was 101·4°, the pulse 126, and quite regular. There was

slight retraction of the head, and any attempt at passive movement produced severe pain extending down the neck into the back. Kernig's sign was positive on both sides, and in eliciting it severe pain was complained of extending right up the back. Brudzinski's sign was negative. The right pupil was somewhat larger than the left, but both pupils were regular in outline, and reacted normally to light and to accommodation. The abdominal reflexes were absent on both sides, as were the knee-jerks. The plantar response on the right side was definitely flexor; on the left side there was no actual movement of the toes on the application of a stimulus, but there was evident contraction or tightening of the hamstring tendons. There was no evidence of papillœdema. There were no cranial nerve palsies. No sensory disturbance was discovered. On examination of the chest the heart was found to be markedly displaced to the right side, the impulse extending beyond the right mid-clavicular line. Movement was somewhat restricted over the right side, but there was no definite flattening, or recession of the chest wall. Percussion note was resonant everywhere, and the breath sounds were everywhere vesicular but somewhat diminished over the right base. No adventitious sounds were heard at this examination, but Dr. Moffatt informed me that at periods there had been well-marked generalised râles. The liver was on the right side.

The absent abdominal reflexes and the absent knee-jerks, combined with apparent slight involvement of the pyramidal path to the left side, indicated the presence of some organic nervous disease. The predominance of pain in the head and neck, together with the retraction, suggested that the meninges were involved; the abrupt onset, the pyrexia and tachycardia, supported an acute inflammatory process as the probable nature of the pathological change. The diagnosis was that of acute meningo-encephalitis.

The question then arose as to the interpretation of the dextrocardia. In view of the fact that there was no transposition of the viscera, and in view of the obvious respiratory embarrassment, it seemed almost certain that the cardiac displacement was acquired and not congenital. There was clearly nothing at the left side of the chest in the nature of a pneumothorax or pleural effusion to account for such displacement, nor was there any evidence of gross fibrosis on the right side which might have led to active dragging over of the heart to that side. The conclusion, therefore, to which I came was that there probably existed massive collapse of the right lung, especially of its basal lobe, and it seemed to me that this was strongly supported by the apparently abrupt, or, at any rate, rapid development of the displacement.

The patient was transferred to Ancoats Hospital for further investigation and treatment. Several attempts were made to perform lumbar puncture, but on each occasion such marked respiratory embarrassment was produced as to render it impossible, and in view of the lung condition an anæsthetic seemed out of the question. For the next 12 hours or so the position was more or less stationary, with occasional paroxysms of increased dyspnœa accompanied by temporary accumulation of secretion in the lungs. During the early part of Sunday afternoon the heart was noticed to be receding towards the left, and, coincident with this, the patient's condition grew worse. This change in the position of the heart was attributed to collapse developing in the left side of the chest. The patient died at 5 P.M.

Post-mortem Examination.—I performed a necropsy on Nov. 1st. The body was well developed and rigor mortis was still present. There was no external evidence of injury or disease, though there was still cyanosis of the face. On opening the thorax no air escaped. The heart occupied a normal position but was unduly exposed, both the lungs were markedly collapsed, and this was especially evident in the case of the basal lobes, which were shrunken up against the vertebral column, completely exposing both cupolæ of the diaphragm. Each pleural sac contained a few ounces of fluid. The lungs themselves were firm and somewhat leathery in consistency, especially the right lower lobe, which was almost completely airless, and did not float in water. Otherwise the lungs were normal. The heart showed no gross abnormality with the exception of a few punctate subepicardial hæmorrhages. There was slight fatty change in the aortic intima close to its root. The liver and kidneys showed cloudy swelling, the adrenal cortex showed the pallor so frequently associated with severe infections. The spleen was not enlarged, was of moderate consistence, and showed no gross naked-eye change. The brain was intensely injected, but there was no exudate on the surface and no meningeal hæmorrhages. Naked eye, the spinal cord showed no apparent change.

Swabs were taken from cerebral sulci in several situations. Culture of this material yielded a very free growth of Gram-negative diplococci identified as meningococci, together with a very long-chained hæmolytic streptococcus.

Commentary.

Massive collapse of the lung is a condition in which there is abrupt, or rapid collapse of the whole or a large area of a lung occurring without any primary intrapleural or pulmonary cause—e.g., pneumothorax, pleural effusion, hæmothorax, bronchial obstruction, &c. The condition was originally described by W. Pasteur, who defined it as "a total deflation of a large area of lung tissue of sudden onset, due to failure of respiratory power." The cases upon which the original description was based were cases of paralysis of the diaphragm, arising from post-diphtheritic neuritis. The majority, however, have occurred apart from this condition, and especially in association with trauma, either to the same or opposite side of the thorax or to some more distant part. This type has been termed the reflex type, and has been particularly described by Sir John Rose Bradford as a result of gunshot wounds. Cases are also described occurring as a sequela of abdominal operations, and, occasionally, the condition may arise as a complication of pneumonia and pleurisy. The exact mechanism of the production of the condition, especially in the reflex type, is by no means clear, whether it be the result of diaphragmatic paralysis or contraction of the bronchial muscle, and resultant cutting off of the air entry to the affected area of lung.

The interesting features of the case here described appear to be: 1. The occurrence of massive collapse of the lungs in association with acute meningitis. 2. The possible explanation of the collapse, whether of the primary paralytic type due to involvement of the cervical cord or whether reflex in origin. 3. The paucity of physical signs of collapse other than the cardiac displacement. 4. The mixed meningococcal and streptococcal infection.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY.

AT a meeting of this Section held on Jan. 5th, Mr. V. WARREN LOW, the President, occupying the chair, Mr. H. W. CARSON opened a discussion on

ABDOMINAL TUBERCULOSIS.

This condition, he said, as seen by the surgeon did not show many varieties, but missing or unusual symptoms might cause diagnostic difficulties, and the state of things revealed after an incision had been made often placed a strain on the surgeon's skill and experience. In the last eight years he had operated on only five cases of tuberculous peritonitis, four of tuberculous enteritis, three of ileo-cæcal tubercle, one of tuberculous appendicitis, and 52 cases of tuberculosis of mesenteric glands. In some of the instances the operation was urgent, usually to relieve obstruction. His series did not support the current belief that abdominal tuberculosis was an affection of childhood. The disease in the mesenteric glands showed the youngest age-incidence—65 per cent. 5–15 years of age, 17 per cent. over 25, two of them as old as 50 and 51. Tuberculous enteritis (including ileo-cæcal) was a disease of middle life. It was not usual for mesenteric gland tubercle to be associated with pulmonary tuberculosis nor for tuberculous peritonitis to be so allied, though tuberculous enteritis and lung disease often coexisted.

Tuberculous Peritonitis.—Mr. Carson asked whether tuberculous peritonitis was ever primary or whether it might not be borne by the blood from some remote focus—pulmonary, mediastinal, tubal, or mesenteric. Three forms were described—ascitic, adhesive, caseous. The last-named, he submitted, had a different ætiology from the other two kinds, being, he considered,

but a stage of mesenteric gland tuberculosis. Preceding the ascitic stage he believed there was a miliary condition, when the peritoneum was invaded by minute nodules, perhaps in the absence of fluid. The adhesive type he looked upon as that of repair, and if this were so it set a definite limit to the scope of operative treatment. Miliary tuberculosis in the peritoneum was only revealed at an operation for relieving pain for which the appendix had been held responsible. Then the correct treatment could be started, thus justifying the operation. Operation for ascites was also legitimate, and had been successful many times, but agreement had not been reached as to whether the operation was really curative or only hastened the adhesive stage. The latter was not likely to be improved by laparotomy; if operation were done the intestine might be found adherent to the parietal peritoneum and thus liable to be injured, while the handling of the gut and the disturbance of adhesions might result in a fæcal fistula. Operation should only be done to relieve emergency; many cases did well if left alone, and improvement was said to ensue from artificial sunlight.

Tuberculous Enteritis.—In two of his cases of tuberculous enteritis obstruction had occurred; in all the ulceration was multiple. There was support for the view that ulceration took place in patients who already had pulmonary tuberculosis and swallowed their sputum. The prognosis was poor. His three cases of ileo-cæcal tuberculosis were all in adults of ages 27, 23, and 51, and in all of them it took the hyperplastic form. The patients did well after a block resection of the affected area, but one died 17 months later of pulmonary tuberculosis.

Tuberculous Appendicitis.—His one case of this condition was of the hyperplastic type, and only microscopical examination disclosed its nature. In the ulcerative form the mucosa may be affected without the other coats being thickened.

Tuberculous Mesenteric Glands.—Mr. Carson said he still retained the views he expressed in a paper read before the Medical Society in 1918 on the subject of tuberculous glands in the mesentery, and they had received confirmation from America and elsewhere. The pain, he maintained, was due to spasm of the circular muscle coat; when mesenteric glands were tuberculous and there was no complication there was no rise of temperature. Sepsis in this condition was unusual; that would cause pyrexia. The average age of his 52 cases was 13·9 years, the oldest being aged 51. The sexes were about equally affected. Except for pain the only common symptom was vomiting, which occurred in half the cases. Disorders apt to be confused with mesenteric gland tuberculosis were colic from dietetic errors, relapsing appendicitis, intestinal worms, and ureteric stone. Colic came on in infrequent attacks and was relieved by vomiting and by action of the bowels. Relapsing appendicitis was accompanied by greater illness, furred tongue, increase of temperature and pulse-rate, flatulence, nausea, and constipation; pain lasted longer and was more localised, and there might be rigidity and tenderness on examination. Worms could only be diagnosed with certainty by finding them in the stools. In ureteric stone the X rays enabled a diagnosis to be made if a ureteric bougie could be passed; even if it could not, the shape of the shadow was quite distinct from that of a calcareous gland. Urinary symptoms might give some help. With regard to complications, he had noted that intussusception occurred only in the non-caseating type in his cases and obstruction in the caseating. Of his 19 non-caseating cases which recovered, ten remained quite well, two had occasional pain still, one had pulmonary tuberculosis and was in poor health, one died of that disease, and five had not been traced. Of the 18 cases which had caseation and survived, 13 remained quite well, 2 had occasional pain, 3 were untraced. Of the 10 calcareous cases which recovered, 5 were quite well, 1 had occasional pain, and the others were untraced.

Mr. Carson, therefore, submitted that tuberculous disease of mesenteric glands was a serious condition, with a high mortality, and in later stages demanded elaborate surgery. His impression was that fewer cases of abdominal tuberculosis were being seen now than formerly, and he suggested two explanations for this reduction. One was that modern medical treatment resulted in a cure of more cases, and the other that since the war the children as a whole were better fed, housed, and clothed, and hence were better equipped for resisting infection. If the milk-supply could be controlled an enormous step forward would result, but the necessary legislation seemed difficult of enactment.

Discussion.

Mr. ZACHARY COPE said that, excluding genito-urinary tuberculosis and psoas abscess associated with active spinal caries, there remained three forms of the disease under discussion—glandular, intestinal, peritoneal. The most common group of glands to be affected was the ileo-cæcal. It was quite usual to find calcified glands in people who were apparently healthy. In the intestine the lesion might take the form of an ulcer eating deeply into the bowel wall and its cicatrisation might result in a stricture. Cæcal tuberculosis usually took the hypertrophic form. The peritoneum might be affected by miliary tubercles forming on the serous aspect of an ulcer of the bowel. If these tubercles were widely spread the peritoneum might be found thickened, even to half an inch, and in such cases fluid was often poured out. In later stages a combination of conditions formed a very serious picture. Usually abdominal tubercle was associated with deteriorated general health, and when this was progressive the possibility of the presence of tubercle must be considered.

Mr. Cope mentioned seven manifestations of the disease as the surgeon saw them. Colicky pains might be the only symptom complained of; they were short, often severe, and might be accompanied by retching or vomiting. The pains were not confined to one spot; there might be fever too. If localised to the right iliac fossa exploration was desirable, as the condition might be appendicitis. A tumour might be evident, formed by large fleshy glands, rolled-up omentum, or hypertrophied cæcal tuberculosis. Intussusception or neoplasm might be simulated. If the tumour was formed of caseous glands there were usually other signs of tubercle also. A skiagram might reveal calcified glands. Adhesion to a calcified gland was a common cause of acute intestinal obstruction. The relief of this obstruction might be very difficult as the adherent coil might be deep down at the back of the abdomen. Obstruction might also be due to a tuberculous stricture. Intestinal ulceration led to diarrhœa. When a fæcal fistula formed it was usually in the region of the umbilicus. Peritonitis due to a perforation into the general peritoneal cavity was usually a fatal complication, as the patient was already debilitated by the primary lesion. It might be a result of an acute miliary invasion of the peritoneum, without any ulceration having occurred, and when this was so the prognosis was somewhat more hopeful. Ascites resulted from a subacute miliary infiltration of the peritoneum. It could generally be diagnosed by considering the history, the general aspect, and the local condition; but mistakes were possible. For example, he had known in a child, aged 6, a large hydronephrosis, extending from diaphragm to pelvic floor, mistaken for tuberculous ascites. In adults it was often difficult to distinguish between cancerous and tuberculous peritonitis; in cases in which he was in doubt the condition had always proved to be cancerous.

Indications for surgical interference in cases of abdominal tuberculosis Mr. Cope set out as follows: (1) to let out the ascitic fluid, which usually was poor in protective substances; (2) to remedy the intestinal obstruction; (3) to suture perforations and drain septic peritonitis; (4) occasionally to remove

large fleshy glands which caused symptoms and could be enucleated without injuring mesenteric vessels; (5) to drain abscesses formed by the breaking down of caseous glands.

Dr. MAURICE A. CASSIDY expressed his agreement with Mr. Carson that tuberculous enteritis seemed to be less common of recent years than formerly; this he attributed partly to a diminished incidence of all forms of tuberculosis and the more general segregation of tuberculous patients in special hospitals and separate departments. One result of this was a great loss of valuable clinical material to the general physician and the student. Tuberculous peritonitis did not seem much diminished, but there was a change recently in the sex-incidence. In a series published by Osler there were 131 females to 60 males, whereas in a series at St. Thomas's Hospital there were 54 males, 45 females. He considered the outlook in uncomplicated tuberculous peritonitis uniformly good; he told his students that if they had to be infected with Koch's bacillus the site to select was the peritoneal cavity, as it gave the best chance of complete recovery without resultant disability. In a series of 267 cases at St. Thomas's the mortality was only 9·7 per cent. and most of the fatal cases died from such conditions as perforation or obstruction; in some other viscera were involved. Some young persons had abdomens which were symptomless yet were the seat of tuberculous tumours, and they had been seen to grow into healthy adult life after but little treatment. Pain in tuberculous peritonitis was a very variable symptom; it might be absent or of any degree of severity. Either constipation or diarrhœa might occur, the latter usually being associated with the passage of fatty stools, due probably to defective absorption following obstruction of lacteals by tuberculous mesenteric glands. In the first 24 hours this peritonitis might be mistaken for appendicitis and surgical interference was harmless if the mesenteric glands were left alone. In adults the more chronic conditions might be confused with carcinoma; the presence or absence of pyrexia was not helpful either way, and there seemed no reason why a tuberculous patient should not develop carcinoma. Cirrhosis of liver might be mistaken for tuberculous peritonitis; the former was sometimes met with even in young children. It was agreed that simple laparotomy in tuberculous peritonitis produced a rapid improvement when progress had been slow on medical treatment. Apart from this simple opening of the abdomen, the treatment of such cases should be on sanatorium lines, and he was quite satisfied as to the marked benefit produced by sunlight and by artificial light. Probably intestinal tuberculosis was a more common early complication of pulmonary tuberculosis than was usually supposed. It could be diagnosed at an early stage, and if efficiently treated recovery was by no means exceptional. In a large series only 7 per cent. were abdominal primarily, whereas in 80 per cent. of fatal cases of the abdominal disease there was also pulmonary tuberculosis. The number of tubercle bacilli found in specimens of the stools of patients seemed to be in direct relation to the quantity of bacilli-bearing sputum swallowed.

The PRESIDENT, in a general review of the subject, said he agreed that what was termed caseous peritonitis was probably due to the bursting of, or the infiltration of the peritoneum by, a caseous gland, and in some cases the result was a fæcal fistula. When he was seeing many children he found the mortality of these cases was very small. Septic peritonitis was a much more serious disease and caused more intense illness than the peritonitis due to tubercle with ascites. He did not agree with Mr. Carson that adhesive peritonitis represented a healing form; he regarded these cases as very malignant, and operative attempts were apt to prove fatal. It was very common to see children with tuberculous mesenteric glands. He ascribed the symptoms mentioned by Mr. Carson as associated with tuberculous glands to cases in which there were mechanical complications connected with those glands, such as kinks or attachments. And he had not seen intussusception except where glands were affected. Frequently tuberculous peritonitis in the male was associated with tuberculous epididymitis.

Mr. CECIL ROWNTREE pointed out that Mr. Carson's work on the clinical side had been confirmed by the experimental work of L. R. Braithwaite (Leeds) on kittens. It was possible to meet with cases having tuberculous mesenteric glands as their only diagnosable disease. The cases were not easily recognised; the children were infected at about 3 or 4 years of age, when they came under the care of physicians. He believed all the cases had some increase of temperature during the actual period of invasion. Afterwards they became better, but did not get well; they were weak and unable to absorb fats for the reason already given. A surgeon was called later, either because complications had developed or at school age because there were attacks of pain, either following games or spontaneous. Many cases were diagnosed as appendicitis, the appendix was removed, and sometimes the patients got better. If they did not a skiagram was taken and revealed masses of calcified mesenteric glands which were probably responsible for the perpetuation of the symptoms. When there were symptoms he considered it was the surgeon's duty to remove the glands.

Dr. JOHN A. RYLE dealt with the early recognition of mesenteric glandular tuberculosis. For this early condition there was no reason for seeking the aid of the surgeon, as, given suitable environment and care, recovery ensued without him. He stressed the loss of energy and initiative at this stage, remarking that if such a child wished to go to bed before his usual time it was a very suspicious sign of early tubercle. The temperature would usually be found to be 99°–100° F., taken carefully in the rectum. When pain was asked about, the child placed his hands on both iliac regions. Associated with this was often a mild but very chronic diarrhœa, the stools being unformed rather than actually watery. An adult with this condition had also severe anæmia, which was very helpful in diagnosis. A skiagram of the chest would probably reveal suspicious shadows at the root of the lungs.

Mr. W. E. TANNER supported Mr. Carson's views. If the symptoms were severe enough to call for laparotomy and large masses of calcified glands were found, it was important to excise those glands; he had usually found the enlargement localised to one group.

Mr. MORTIMER WOOLF, speaking of ileo-cæcal tuberculosis, said that two years ago he had under his care a man who had been operated on in another hospital, a tiny incision having been made over the anterior superior spine, and it was said the surgeon had merely put in a finger and then closed the wound. Nine months later he was sent to the speaker as he had been having pain, and he found a large tumour, probably due to ileo-cæcal tuberculosis he thought. He did a lateral anastomosis between the ileum and the ascending colon. The man was now well, having lost his obstruction, but there was still some tumour there. He, the speaker, wondered whether it was always necessary to do an extensive operation—whether a lateral anastomosis would not sufficiently answer the purpose. And he raised the question whether the enlarged glands were always necessarily tuberculous; surely it was possible for the enlargement of some of them to be of inflammatory type. On to the latter there might be tuberculous disease grafted subsequently.

Reply.

Mr. CARSON said that for a long time he thought with Mr. Warren Low that pain meant complication, because in two cases within a short time spasm and intussusception took place before his eyes on the operating table. But he now thought these cases had irritation of the nerve-supply to that portion of the gut, and that in consequence there was intense spasm of circular muscle-fibres. If he found a weird

abdomen and tuberculous epididymitis he would not fail to diagnose tuberculous peritonitis. In the neck gland disease was always secondary. The resistance of these glands was diminished by some infection of the tonsil, and then tubercle was secondarily implanted on them, and he thought the same was true of the glands in the mesentery. He agreed that not all these gland enlargements were necessarily tuberculous; if they had been he thought he would have seen a great many more cases than he had done.

SECTION OF NEUROLOGY

AT a meeting of this Section on Jan. 13th Sir JAMES PURVES-STEWART took the chair, and Dr. ALDREN TURNER, President of the Section, opened a discussion on

EPILEPSY.

After summarising the features of various forms of epileptic manifestations, he drew attention to Rowse's attempt to broaden the aspect of epilepsy so as to include the psychic, the view of that worker being that epilepsy was the prototype of every functional nervous illness, and that in certain phases of disturbed consciousness attributable to emotional causes there was a difficulty in separating epilepsy from other mental or psychic states. The fact was, said Dr. Turner, that there was no single clinical entity to which the name of epilepsy could be applied, and evidence was accumulating that the epileptic type of fit-reaction might result from mental as well as from physical causes. Three groupings seemed possible: (1) the organic, (2) the toxinfective or metabolic, and (3) the psychogenic; but there remained a great mass of residual cases which could only, at the present stage of knowledge, be designated as "epilepsy of unknown origin." Any cerebral organic lesion might have as one of its symptoms seizures resembling an epileptic fit. When the cause was a trauma, epilepsy might not develop until four or five years after the accident, and there was an absence of any definite or constant relation between the region of the brain involved and the mode of onset of the major fit. Clearly, also, the fit was not due to any cerebral scarring. Only about 5 per cent. of a large series of penetrating wounds of the head developed epilepsy, and there must therefore be something more than tissue changes at the seat of injury to account for traumatic epilepsy. A case had been described by Foster Kennedy, in which the patient had a fit during an operation on the parietal cortex; sudden blanching of the cortex was observed, followed quickly by venous engorgement and protrusion of the brain beyond the level of the bone defect, and this protrusion coincided in time with the period of the clonic convulsion. The inherent instability of epileptic patients might be due to defect in the vegetative nervous system. Dr. J. S. Collier favoured the toxic origin of epilepsy, and was able to make out a strong case. In some cases of epilepsy there was evidence, on other grounds, that the normal endocrine-balance was disturbed, but in Dr. Turner's hands therapeutic measures based on endocrine therapy had given only negative results. On the question of epilepsy of psychogenic origin, he said that there was difficulty in distinguishing the hysterical from the epileptic type of fit, especially when the patient was under psychical stress. The question arose whether even an intensified emotion, without any other factor, would not suffice to produce an attack of major epilepsy. Some patients derived benefit from psychotherapy, but there was reason for saying that psycho-analytic treatment had not had the effect which was expected of it. He found it difficult to fix upon any special mentality in the case of all epileptic patients, but anxiety due to uncertainty as to when another fit might occur was a very important accompaniment. In a few cases in which, after years of seizures, an arrest had been brought about, there had been a cessation of this anxiety and a re-establishment of the normal attitude towards life. Dr. Turner proceeded to discuss the large group of cases of epilepsy of unknown origin. About 33 per cent. of a large series showed heredity in regard to the malady, and in a small number of the remainder alcoholism might have caused injury to the germ-plasm, or there might have been some form of intoxication during intrauterine life.

Discussion.

Dr. GEORGE RIDDOCH said that during the past two years investigation into this subject had been going on at the London Hospital. Many questions about the disorder remained unsolved, notably the large question of the ætiology, as well as the mechanism by which the seizure and the loss of consciousness were produced. Dr. Russell Brain had investigated 200 people (unselected) of the hospital class and had found that there was a hereditary history in 28 per cent.; but taking into consideration the difficulty of getting accurate family histories, and the likelihood that small attacks of petit mal occurred without any significance having been attributed to them, the speaker thought that 28 per cent. was far below the actual figure. Convulsions in infancy were about twice as frequent in families with a hereditary history of epilepsy as in those without such a history. Insanity had not been found to be more common in epileptics than in non-epileptics, but in epileptic families there was a greater proportion of epileptics amongst the first-born members than among those born later. In the late war only 5 per cent. of soldiers who had sustained head injuries were said to have had epilepsy, but this figure was probably well on the low side, because petit mal attacks had passed unrecognised. In the investigations at the London Hospital a large proportion of the patients subject to attacks of petit mal had shown definite improvement on being allowed nothing but water for a fortnight, the fits either ceased within 48 hours of the beginning of starvation, or their frequency was greatly diminished, and the benefit continued for some time after food was resumed. He did not advocate this course as a therapeutic measure; the test had been made in view of claims which had been made. Dr. Riddoch referred to experiments which had been done with the object of securing a good convulsant, with which results could be checked and repeated at will. Cocaine gave better results than insulin. A 1 per cent. solution of cocaine injected into the marginal vein of the ear of the rabbit produced seizures in every way comparable with those in the human epileptic; the animals were unconscious and many of them had incontinence and a post-convulsive period of excitement. Cats gave a different result with cocaine. Thujol gave definite results, and work with this drug was being continued. The intravenous injection of bromide had also been tried in increasing concentration. The seizures had gradually diminished in severity and had finally been eliminated altogether.

Dr. RUSSELL BRAIN referred to the biochemical work which had been done at the London Hospital and particularly to estimations of the blood-cholesterol of epileptics. Cholesterol, he said, constituted one-eighth of the solids of the brain by weight, and it was thought there might be a relationship between epilepsy and the metabolism of cholesterol. In women there was an abrupt fall in the blood-cholesterol during the days immediately preceding menstruation; sometimes the amount fell to half the normal during the catamenia, and this was attributed by one worker to formation of the corpus luteum. Women subject to epilepsy were most likely to have fits while their cholesterol was at its minimum. Dr. Brain showed a comparative table to demonstrate that on the average the figure for cholesterol was lower in epileptics than in normal people, whilst the maxima in both showed even greater differences. In eight cases examined in this way it was found that an attack was preceded by a prolonged fall in the level of the blood-cholesterol; the observations were taken hourly. After an attack the cholesterol content showed a substantial rise. Cholesterol was a

substance whose physiology was largely unknown, but it was hoped that something definite would emerge from the present research.

Dr. S. A. KINNIER WILSON pointed out that epilepsy was not a disease entity but purely a symptom; recurrent fits accompanied many morbid processes such as cerebral tumour, neurosyphilis, arteriosclerosis, and many toxic and inflammatory conditions. Epileptic symptoms were not themselves a sign of disease. Convulsions could be brought about experimentally in animals which were anatomically and physiologically normal. Many movements in fits were purposive in character, though they were outside volitional control. There were cases in which not more than one or two fits occurred, and those fits therefore could not be looked on as manifestations of disease. A fit was the discharge, the setting free, of accumulated nervous energy in healthy neuromechanisms. Some fits were clearly cortical; some were caused at an obviously lower level, pontine or spinal; and he did not see why there should not be visceral fits. The profession remained in ignorance, however, of the circumstances under which accumulated nervous energy was discharged, and this was the crux of the problem.

Dr. T. GRAINGER STEWART said it was everyone's duty to try to help in the solution of this difficult question. Probably all members in their practice saw cases which fell into certain groups, cases in which the association of the attack with certain physical changes was constant. In seeking for the cause of epilepsy he thought it unwise to regard the disorder as a disease; it was a manifestation of something which was abnormal. He advocated the collection and investigation of cases whose clinical features and physical changes were demonstrably similar. During attacks some patients, for instance, developed sweat having a very pungent smell. One case was that of a young woman, a teacher, who had been exposed to air-raids, which might be considered a psychical cause; she had never previously had epilepsy. Before a fit she had most offensive sweat, and after the attack had developed, instead of being fresh-complexioned, her skin became greasy, sallow, and blotchy, and was overspread with a layer of perspiration. Her doctor said that previously her pulse had been normal. All the cases he had had in this category recovered on being treated with belladonna. None had had a recurrence during three years, and the longest time it was necessary to treat with belladonna was six weeks. He held the view very definitely that not only one cause was at work in epilepsy, but there was an infinite variety of causes, acting in persons otherwise normal and healthy.

Dr. G. A. SUTHERLAND said that his difficulty had been in definitely recognising cases of true epilepsy. He had under care a boy, aged 12, whom he first saw five years ago on account of petit mal, a diagnosis he had confirmed. The boy had suddenly screamed and fallen unconscious, then was drowsy, and recovered. He had had five such attacks, but Dr. Sutherland now felt he had not had petit mal at all. He thought that sufficient attention had not been devoted to the circulation in epileptic patients, though both Sir William Gowers and Sir Clifford Allbutt had said that there were no changes in the circulation. Some attacks, he felt convinced, were due to cerebral anæmia. In these the attack might be only mild, leading to syncope, or more severe, to the accompaniment of convulsive movements. Another kind of attack was due to disturbances in the conducting tissues of the heart, and the change might take the form either of extreme tachycardia or severe bradycardia. The attacks associated with heart-block were not due to a slowing of the heart beat, but to a standing-still of the ventricle for a few seconds. These cases bore a close relation in manifestation to cases of epilepsy.

Reply.

Dr. ALDREN TURNER, in reply, remarked that his chief submissions had not been seriously questioned. With reference to Dr. Sutherland's observations, in addition to arrest of ventricular action at the outset of a fit, a fall of blood pressure had also been noted. Some authorities were inclined to attribute the convulsive seizure to arrest of cerebral circulation, but he was very sceptical as to that, and looked upon the arrest of the circulation as a consequence of the seizure. He felt that little light had so far been thrown on the problem by the laboratory researches into the biochemistry of epilepsy, especially in France and America. The charts shown by Dr. Russell Brain were very interesting, but in some of the patients concerned there was a definite fall in the cholesterol content without any fit having followed. And he felt a difficulty in regard to the attempt to harmonise experimental induction of convulsions in animals with what happened in the human epileptic patient. The important point was whether in those animals anything like an attack of petit mal was produced, as that was the important manifestation of epilepsy, though admittedly grand mal was more spectacular.

CLINICAL SECTION.

EXHIBITION OF CASES AND SPECIMENS.

A MEETING of this Section was held on Jan. 14th, Sir HERBERT WATERHOUSE, the President, in the chair. A number of cases were shown.

Thrombocytopenia Purpura Hæmorrhagica.

Dr. BERNARD MYERS showed a woman of 30 who had been seen by the Section several times before as a severe case of essential thrombocytopenia purpura hæmorrhagica. She had started to bleed at the age of 12, but the first large hæmorrhage had been a menorrhagia at 24. All the usual means of treatment, such as calcium, sera, and blood transfusion had failed to effect more than a slight temporary improvement. She had the typical reduction of blood-platelets, which were often absent altogether; the coagulation-time was normal, which differentiated her condition from hæmophilia; her bleeding-time was 15 minutes and the capillary resistance test was positive. Splenectomy as recommended by the Section had now been performed, since when the patient's health had been excellent in every way and there had been no more hæmorrhages or purpuric spots. The blood-platelets had returned to normal soon after the operation, and the bleeding-time and capillary test were now normal. Dr. Myers remarked that there must be many cases of menorrhagia of this type going about unrecognised.

The PRESIDENT, in answer to a question by Dr. F. PARKES WEBER, said that in the only fatal case of splenectomy he had known the patient had died of thrombosis in the splenic vein spreading to the superior mesenteric. The operation might be extremely simple or very formidable, and it was difficult to forecast its result. He regarded slipping ligatures as due to bad surgery.

Case for Diagnosis.

Dr. SIBYL R. EASTWOOD showed for diagnosis a case of left-sided muscular wasting of the type of Erb's palsy.

The patient was a boy of 16 who had been brought to hospital last August after a bicycle accident. He had severe concussion and several bruises and abrasions; there was no fracture. Four days later, when the symptoms of cerebral irritation had passed off, inability to abduct the left arm was noticed and had persisted. Since then the shoulder had been kept abducted and massage and electrical treatment had been applied, but there had been no improvement except a very slight return of sensation.

At the time of showing the boy held the shoulder on the affected side higher than the other, giving an appearance of some loss of substance in the left trapezius, but the muscle acted strongly and responded to faradism. There was atrophy and paralysis of the left supraspinatus, infraspinatus, deltoid, biceps, coracobrachialis, brachialis anticus, supinator longus, and clavicular portion of the pectoralis major muscles. The slight relative weakness of other muscles was no more than might be accounted for by partial disuse. There was diminished sensibility to touch, pain, heat, and cold

over a crown-sized area over the insertion of the deltoid. There was marked deviation to the left of the spine of the seventh vertebra, constant in all positions, but without any pain, tenderness, or limitation of movement. Ophthalmoscopic examination suggested a past papillitis. The Wassermann reaction was negative and the X ray films revealed nothing more than a diminution in the joint space between the fifth and sixth vertebræ, possibly due to the curvature.

The only adequate explanation, said Dr. Eastwood, appeared to be that there was rupture or stretching of the fifth cervical nerve at its junction with the sixth. Operation was proposed.

The PRESIDENT said that in his experience operations in cases such as this were very unfavourable. Mr. W. H. OGILVIE and Mr. C. P. WAKELEY agreed, and remarked on the amazing extent to which recovery often took place after about a year's rest.

Paresis of Hand with Cervical Rib and Sprengel's Shoulder.

Dr. SAXBY WILLIS and Mr. OGILVIE showed a woman of 56 with radicular paresis on the right hand associated with abnormal bone formation of the seventh cervical vertebra and Sprengel's shoulder. She had noticed for six years only an inability to extend the metacarpophalangeal joints. There was wasting of the palmar interossei and reaction of degeneration in the common extensors, but no sensory changes. The X rays showed very large transverse processes on the seventh cervical vertebra and a rudimentary first dorsal rib only on the right side. They proposed to explore and see if the pressure on the seventh nerve-root could be relieved. There might be fusion of two transverse processes narrowing its outlet.

The PRESIDENT agreed that operation would be fully justified.

Dr. WEBER pointed out that the extensions on the seventh cervical vertebra corresponded with what was called the "short type" cervical rib, a type which was most often associated with paresis and symptoms which did not appear until the "early degenerative" stage of life when there was a tendency to kyphosis. He did not think the case should be operated on.

Acromegaly.

Dr. WILLIS showed a woman of 28 who had acromegaly of possible traumatic origin, with proliferative changes in the interphalangeal joints of the left thumb and middle finger.

The accident occurred seven years ago, when she had had concussion following a fall from a trap. She made a good recovery, but four years later noticed a tendency to painful swelling of the hands and feet, and, a year later, pain in the jaw. The menses ceased two and a half years ago. She had had severe frontal headaches since childhood, but these had been worse in the last 18 months. She now had acromegalic facies, hands, and feet, with a chronic proliferative bone change in the proximal interphalangeal joint of the left middle finger and both joints of the left thumb; the terminal phalanges of all the digits were enlarged. There was no optic atrophy, but a restricted field of vision in the upper temporal quadrant of the right eye. The pituitary fossa was seen by radiography to be much enlarged and there was increased sugar-tolerance.

Dr. E. STOLKIND questioned whether this were indeed a case of acromegaly; there was no change in the tongue, which was the earliest symptom in 95 per cent. of cases. His view that there was no evidence for the traumatic origin was supported by Dr. WEBER.

Ulceration of Lip in Leukæmia.

Dr. W. A. MILLIGAN shewed a woman of 47 with (?) tuberculous ulceration of the lip associated with lymphatic leukæmia. There was a history of familial tuberculosis and of a sinus under the chin which had discharged for a long time. In June of last year she had noticed a pimple on her lower lip which gradually formed an ulcer and spread to involve the whole surface of the lip. It was very painful. In addition she noticed enlarged glands in the axilla and groin. The blood-count showed 96·6 per cent. of small mononuclears.

The PRESIDENT said that it was very hard to say whether this lesion were tuberculous, and quoted a case of very acute and rapidly fatal ulceration of the anus and another of severe Vincent's angina in leukæmia.

Dr. WEBER said that very severe inflammation was well known in acute leukæmia, but this case was chronic. If it were tuberculous it would probably have blocked the lymphatics and produced a septic elephantiasis—Dr. H. M. ODDY, remarking that an air-cooled mercury-vapour lamp had improved the condition slightly, said that pressure was needed as well.—Dr. L. S. T. BURRELL said that he regarded the case as one of lowered resistance due to leukæmia, allowing the formation of a simple ulcer. He had seen very bad oral conditions in lymphatic leukæmia. A tuberculous lesion would have responded more quickly to treatment by light.

Heart-block.

Dr. B. T. PARSONS-SMITH showed a man of 70 with complete heart-block.

The patient had always smoked excessively, but had been a very moderate drinker and had had good health except for occasional bronchitis and one attack of pneumonia in 1918. Eighteen months ago he began to have frequent syncopal seizures with bradycardia. The heart was found normal in size with a feeble apical impulse and sounds varying in intensity. There was a soft systolic murmur at the apex. The pulse was 30, the blood pressure 180/90. The presence of complete heart-block was confirmed by electrocardiographic and polygraphic tracings. Since then the patient had gradually improved and resumed a quiet daily routine. The syncopal attacks ceased after a course of adrenalin injections. The block persisted, but caused no symptoms except occasional giddiness and sensation of heavy beating at night. After a course of barium chloride (½ gr. b.d.) the pulse-rate had increased to 40/50, and about two months ago rose to 72 with restoration of the normal rhythm. Just before Christmas the heart-block recurred but without symptoms. This was ascribed to the barium, and suggested further inquiry into its dosage and combination with other drugs.

Aleukæmic Lymphadenosis.

Dr. WEBER showed a Polish Hebrew tailor of 60 with symmetrical, general, moderate enlargement of all the superficial groups of lymphatic glands.

The patient had had no previous illnesses and no symptoms. There was no evidence of abnormalities in any viscera except some shadowing in the radiogram of the posterior mediastinum and hilus regions of the lungs. The blood pressure was 145/95. There was no albumin or sugar in the urine. The Wassermann and Meinicke reactions were negative and the Pirquet cuti-reaction positive. The blood count showed 100 per cent. hæmoglobin, 10,300 white cells, consisting of 49·4 per cent. polymorphs (0·8 per cent. young forms, 1·1 per cent. with rod-shaped nuclei, 47·5 per cent. with segmented nuclei) 21·4 per cent. small lymphocytes, 24 per cent. large lymphocytes, 1·2 per cent. monocytes, 0·2 per cent. basophils, 0·6 per cent. eosinophils, 3·2 per cent. lymphoblasts; no myelocytes.

Dr. Weber gave this case the name of chronic lymphatic aleukæmic lymphadenosis because there was no great increase in the total white cells, but only a relative excess of lymphocytes. The generalised glandular enlargement and absence of blood-eosinophilia ruled out the diagnosis of Hodgkin's disease. There might be a danger that active treatment by X rays would convert a chronic inactive case into an actively progressive one; he thought it was best left alone.

Vascular Tumour of Meninges.

Mr. WAKELEY showed three cases. The first had been shown in November as a tumour of the skull with definite evidence of a left-sided spastic hemiparesis with Jacksonian seizures. Radiography revealed an area of rarefaction corresponding to the termination of the middle meningeal arteries. At the operation the blood pressure had fallen to 80 mm. Hg when the osteoplastic flap was turned down; this should be an indication to stop any operation on the brain, and the second stage was therefore postponed for ten days, when a large vascular tumour on the outer side of the dura mater and growing from a Pacchionian body was excised,

and bleeding was stopped by the diathermal cautery. The wound healed well and the patient was now able to walk, but still dragged his left leg.

Cirsoid Aneurysm.

The second case was a cirsoid aneurysm of the right suprascapular artery in a man of 66 who first noticed a lump six months ago. The pulsating swelling lay below and slightly outside a congenital nævus and measured about 3 inches. Running down and slightly outwards from this was a dilated, tortuous, thickened vein. There was marked pulsation and thrill and a diastolic bruit all over the swelling. These were eliminated by pressure on the subclavian artery, and removal after temporary ligature of this vessel was the treatment proposed.

The PRESIDENT and Mr. OGILVIE concurred as to the importance of temporary ligature, as the bleeding from this type of tumour might be appalling.

Paget's Disease with Nephrolithiasis.

The third case was one of Paget's disease with renal calculus in a man of 67.

Enlargement of the head had been noticed six years and bowing of the legs four years ago. Twenty-six years ago some renal calculi had been removed from the left kidney and for ten years the patient had had periodical attacks of pain in the left loin. Last November he had a typical renal colic followed by swelling of the right testicle. Radiography showed four large stones in the left kidney and cystoscopy revealed a cystitis and a little pus exuding from the left ureter. The urea concentration of the right kidney was 2·74 per cent., so nephrectomy was performed. Owing to the kyphosis the last rib almost met the iliac crest, and made the operation difficult, but recovery was uneventful.

In reply to a question Mr. WAKELEY said that he did not mean to suggest any connexion between the two conditions, but Dr. E. I. SPRIGGS remarked that recently an attempt had been made to ascribe all these conditions to an infective origin, and quoted a case of a patient under his care in whom the bone disease had distinctly improved after the removal of a chronically inflamed appendix.

Mr. OGILVIE showed a case of

Tumour of the Calf.

At the age of 19 (40 years ago) the man had twisted his right leg and been three months in hospital; there had been no fracture. During the next 12 months a lump slowly appeared in the left calf and since then had given no trouble. The swelling was large, rounded, placed deeply in the gastrocnemius, elastic but not fluctuating, and not tender. It was probably a thick-walled cyst of traumatic origin. Mr. Ogilvie compared it with the cysts due to rupture of the rectus in typhoid, and pointed out that it must be a real tumour, as inflammatory fibrosis would have diminished in size after all that time.

The CHAIRMAN remarked on the size of the lesion and said he had a strong suspicion that these lesions were all really sarcomata. Cysts about the knee were liable to travel down the calf, and this might be an example.

Mr. OGILVIE agreed that it might be in the nature of a Baker's cyst.

JAMES MACKENZIE INSTITUTE FOR CLINICAL RESEARCH.

AT a meeting of this Institute held on Dec. 21st last Major WALTER ELLIOT gave an address on

CLINICAL RESEARCH IN ITS RELATION TO THE PUBLIC HEALTH SERVICES.

Expressing his conviction of the valuable results which must accrue from the meeting of public health administration and general practitioners, he laid it down as a fundamental rule that every respect must be paid to the opinions of those in touch with the living being. The fact that for the first time in history research had figured in the agenda of the Imperial Conference which had been held during the autumn marked a distinct stage in the attitude of our administration to it. But there was a danger that too much reliance was being placed upon the word "research" and that anyone getting into difficulties had only to pronounce the magic word to have these difficulties overcome. There was also the danger of clinical research coming to be looked upon as something apart from the practice of medicine, whereas it should grow out of the daily work of practitioners. It required observation, intuition, and imagination, just as much in the clinician in his daily round as in the laboratory worker.

In the relationship of clinical research to the public health services there was the danger that the enormous machine of administration might prove of more injury than service to the work of people who were, so to speak, on their own and uncoördinated. One way to avoid this danger was to imbue the minds of the administrator and the clinician with a proper conception of the work and difficulties of research. The administrative worker must come in contact with the growing process which research represented.

The sum of £2,860,000, said Major Elliot, had been spent in Scotland on feeding at the public expense during 1926, and the State had been devoting particular attention to the problems of nutrition as affecting child welfare, particularly with regard to rickets. Public authorities were beginning to spend large sums on irradiation. Expenditure on treatment by cod-liver oil, however, might be counted in pence against shillings for treatment by light, and authoritative scientific opinion might thus be of immediate financial importance. The problem was fully discussed in the Scottish Board of Health Report for 1925 and a Conference had been called in Edinburgh in July, 1926, by the Board of Health with the object of enlisting the physiologist and biochemist to serve the clinical man who had for many years worked at the problem. The idea was to give the clinician the actual living work of the scientist and not the published results alone. This was an attempt to yoke the science and art of medicine together to this practical problem in Scotland and it was an example only. The general questions involved were of great interest and importance.

The relationship of research and administration had been considered at the Imperial Conference, and Lord Balfour had made a preliminary survey of the problem, which though it dealt with industry and agriculture rather than medicine, was largely applicable to the question under discussion.

"Can we suppose," said Lord Balfour, "that either money or organisation can increase the supply of original scientific genius, or direct it, when found, into utilitarian channels? It is plainly impossible. Genius cannot be made to order nor discovered by rule. The best we can do is to provide fitting opportunities for its exercise when we are fortunate enough to find it. . . . Yet I am convinced that much may be accomplished if we are not too ambitious. . . . How, then, is it possible for the Conference to assist? It cannot give money; it cannot impose a policy . . . Let us cultivate easy intercourse and full coöperation will follow. Investigators in the same intellectual field though far separated in space will work as partners. Overlapping, and all the intellectual waste that accompanies overlapping, will be greatly diminished; and considered judgments about the gaps in our knowledge which most urgently require to be filled will follow as of course."

In conclusion, Major Elliot said that public health work would increasingly concern itself with research; that control, especially superimposed control, would of necessity fail, and opportunities for work were the most that organisations could hope to offer; and that the independence of scientific institutions ought to be jealously guarded so as to provide the necessary check on the rapidly increasing undertakings of State research.

Reviews and Notices of Books.

HISTORY OF MEDICINE.

An Introduction to the History of Medicine from the time of the Pharoahs to the end of the Eighteenth Century. By CHARLES GREENE CUMSTON, M.D., Lecturer on the History of Medicine and Medical Philosophy in the University of Geneva. With an Essay on the Relation of History and Philosophy to Medicine, by F. G. CROOKSHANK, M.D. London: Kegan Paul, Trench, Trübner. 1926. Pp. 390. 16*s.*

THE author of the ideal history of medicine would have to be one whose years were those of Methuselah, whose knowledge of languages was equal to that of Mezzofanti and whose mental equipment was that of St. Thomas Aquinas, Newton, and Laplace combined. Dr. Cumston has attempted no more than an introduction to the subject, but in this introduction he has succeeded in laying foundations upon which those who care to go more deeply into the subject may build an elaborate edifice of knowledge. In his first chapter he shows the importance of an understanding of the way in which our modern knowledge of health and disease grew like some great forest tree from very small beginnings, and all of us, when we consider the discoveries and the mistakes of our ancestors, may well remember the dictum, "Do not despise the bridge which carries you across." Chapter II. deals with Egyptian Medicine, and Chapter III. with Hindu, Chaldean, and Persian medicine, while in Chapter IV. Dr. Cumston discusses Homeric medicine and the views of the early Greek philosophers. The next two chapters are concerned with Hippocrates and Hippocratic medicine, various extracts from the Corpus being given which should certainly lure the reader to make further investigation into Hippocrates by way of the excellent translation now appearing in the Loeb library. Incidentally, Dr. Cumston would have done better to give his Hippocratic references more fully; he has given all his Homeric references in full, and a knowledge of Homer is far more widespread than is that of Hippocrates. The direct successors of Hippocrates, the School of Alexandria, Erasistratus and Herophilus, the Empirics and other schools and sects are described; Soranus is next mentioned, and the work of Caelius Aurelianus is very fully considered. This writer, whose date is variously given as from the first to the fourth century A.D., is the author of a work upon acute and chronic diseases, which has come down to us in very bad Latin, but valuable in that it preserves many of the writings of his predecessors; he also made a not very accurate translation of Soranus. Galen and the practice of medicine at Rome are discussed in Chapters XI. and XII., and are followed by a chapter on Islamic medicine, which is perhaps the best in the book, although Dr. Cumston might have made more of that great Nestorian school of medicine at Gondisapor, whose researches were so valuable to the Arabs. Chapters XIV., XV., XVI. deal with mediæval medicine, including the schools of Montpellier and Salerno, together with medicine and her handmaids in the sixteenth century; the three following chapters consider medicine in the seventeenth and eighteenth centuries. Among the sixteenth century physicians Dr. Cumston rightly gives much space to one who is too little known—namely, Jean Fernel, 1497–1558, one of the earliest composers of a System of Medicine. Bichet is practically the last-mentioned physician, and the book ends with a chapter upon the Evolution of Therapeutics.

Dr. Cumston's book is one which may be recommended, together with Dr. Garrison's, to all who wish to know something of the history of medicine.

DISEASES OF THE HEART AND LUNGS.

A Handbook for Nurses. By A. I. G. MCLAUGHLIN, M.B., Ch.M. Syd., Assistant Medical Officer, Tuberculosis Dept., St. Thomas's Hospital. London: Faber and Gwyer. 1926. Pp. 185. 4*s.* 6*d.*

WITH the widening of the scope of their examinations nurses are finding that general text-books hardly cover the ground, and the numerous small special system volumes which have been appearing recently are likely to be welcomed. Dr. McLaughlin's book is a valuable addition to these. He deals first with the anatomy and physiology of the heart and lungs and then discusses diseases of the heart and blood-vessels, and those of the respiratory system in detail, pneumonia and pulmonary tuberculosis being given separate chapters. A section on surgical procedures contains a description of the principal minor and major operations on the chest; it is unfortunate that there is no mention of Burrell's aspirating apparatus since nurses often seem to find difficulty in understanding how it works. There is an exceptionally good paragraph in which "heart attacks" are classified and described.

SURGERY OF THE STOMACH.

Chirurgie de l'Estomac. Part I. By HENRI HARTMANN. With the collaboration of NICOLAE BARBILIAN, R. BENSUADE, CHABRUT-ASTAIX, DE POLIAKOFF, and ROBERT TARJAN. Paris: Masson et Cie. 1926. Pp. 336. 6*s.* 8*d.*

THIS is the first part of an extensive work on the surgery of the stomach, in which all aspects of the subject are treated in some detail. The earlier part of the book describes the examinations necessary, including gastroscopy; for this the author predicts a great future, although he regards it as rather a dangerous method at present, only to be used when other methods of examination, apart from exploratory laparotomy, have failed to lead to a diagnosis. A long section on the technique of operations on the stomach includes pre- and post-operative methods. Here we find statistics collected about such rare operations as total gastrectomy and cardiectomy. The chapter on perforated ulcers of the stomach is particularly good. Prof. Hartmann rejects gastrectomy in these grave cases, believing that the mortality of this operation is twice as great as that of simple suture or suture combined with gastro-enterostomy, a method which he believes gives results uniformly good. All through the book cases are described which illustrate the points brought out, and the whole forms extremely good reading. The problems surrounding gastro-enterostomy are discussed in critical fashion. We note that the mortality in the hands of Prof. Hartmann and his associates has been 10 per cent. in benign conditions, and the cause of this mortality is set forth in a section which is well worth perusal. On the whole Prof. Hartmann thinks gastro-enterostomy is an extremely satisfactory operation for ulcer wherever situated, for of 488 cases only 10 required a subsequent operation. A clear account of gastro-jejunal ulcer and its treatment is included and an important section on cancer of the stomach, where 100 cases are reviewed. The results of the excision of cancer have been particularly good.

Altogether this book is a satisfactory achievement. An enormous amount of literature has been examined and the subject has been treated from a judicial standpoint.

ELEMENTS OF HYGIENE AND PUBLIC HEALTH.

Second edition. By CHARLES PORTER, M.D., B.Sc., M.R.C.P. Edin., Barrister-at-Law, Medical Officer of Health, Metropolitan Borough of St. Marylebone. London: Oxford University Press. 1926. Pp. 425. 14*s.*

Dr. Porter has the gift of writing in a bright and interesting way about subjects which do not lend themselves readily to such treatment. The first edition of this book, published in 1917, met the need for a work on public health more detailed than the elementary ones, of which there is no lack, but smaller and more readable than the tomes required by post-graduate students of hygiene and public health officials. Both in its original and its newer form, Dr. Porter's book caters for medical students and also for practitioners who wish to familiarise themselves with public health practice. Its revision is, however, only

partially successful. The changing aspects of hygienic teaching can hardly be reflected in the later editions of any such work without drastic rearrangement of its contents. For instance, it cannot be said that present-day ideas as to ventilation, or the significance of accessory food factors and the balance of amino-acids in proteins, find adequate expression in the chapters dealing with these subjects, and it is disappointing that the description of various means of disinfection is not accompanied by any discussion of the value or importance of disinfection as usually practised. Again, it would have been worth while, in our opinion, to devote a little space to a judicial consideration of the extent to which domestic refuse is, or is not, a real danger to health. The treatment of special schools is, to say the least of it, perfunctory. We notice, too, the retention of the old family names for the varieties of rats. There are also some minor inaccuracies. It is not strictly correct to say that Orders of the Ministry of Health are merely instructions to local authorities, or that the heat obtained from electric fires is almost entirely radiant, or that payment of emergency fees under the Midwives Acts by local authorities is optional. These criticisms are made in no captious spirit, but since we believe that public health policy must depend to a great extent on the enlightened views of practitioners, to whom the public look for guidance on matters affecting both their own health and that of the community, we feel that space devoted to descriptions, diagrams, and illustrations of drains, traps, and sanitary conveniences might well be sacrificed to the discussion of the fundamental problems of hygiene. The general ground of public health, however, is well covered in this book, and it can be confidently recommended to students who wish to provide themselves with a text-book which will be useful for reference when they enter the general practice of medicine.

THE ENDOCRINE ORGANS.

Part II. Second edition. By Sir E. SHARPEY-SCHAFER, LL.D., D.Sc., M.D., F.R.S., Professor of Physiology in Edinburgh University. London: Longmans, Green and Co., Ltd. 1926. Pp. 418.

SINCE the new edition of The Endocrine Organs (Part I.) was published in 1924, this supplementary volume has been eagerly anticipated. Prof. Sharpey-Schafer is probably better qualified than is any other man to speak with authority upon this subject, and in these publications he not only collects the extensive literature dealing with endocrine physiology, but he edits it with a critical eye.

This volume, which fully maintains the high standard of its predecessor, deals with the pituitary, pineal, alimentary canal, pancreas and sex glands. There is also included a small supplement to Part I., giving details of recent advances made in our knowledge of the thyroid, parathyroid, and suprarenal capsules. For example, the question of the differentiation of exophthalmic goitre and toxic adenomatous goitre is discussed, and the value of iodine in the treatment of the former mentioned. Reference is also made to the experiments of Collip with parathyroid extract: Prof. Sharpey-Schafer points out that this work has placed beyond doubt the question of the activity of this extract in regulating calcium metabolism and especially the percentage of calcium in the blood. In the main part of the book much space is devoted to the pituitary body. The early chapters deal with the morphology and general and microscopic structure of the gland, which is described as being made up of four parts, the anterior, tuberalis, intermedia, and nervosa. Particular attention is directed to the pars tuberalis and pars intermedia. Ten chapters are allotted to the action of extracts of the posterior lobe on the various systems of the body, and others are concerned with the clinical syndromes associated with pituitary disease and with the relation of this gland to the other endocrine organs. Finally, the therapeutic uses of pituitary extracts are discussed. Many of the problems which arise in connexion with pituitary function must be considered as still undecided, and where this is so Prof. Sharpey-Schafer gives a full critical review of the reliable evidence. Moreover, his criticism is always constructive. A good example of his method of dealing with controversial questions occurs in his presentation of the problem of polyuria and the pituitary body. He points out that while some clinicians and experimental workers regard the polyuria which accompanies tumours of the pituitary region as due to an effect upon the pituitary itself, others consider that it is the result of pressure on the base of the brain, the tuber cinereum. The evidence for these views is completely discussed; the author considers that insufficient account has been taken of the pars tuberalis of the pituitary, which is intimately connected with the tuber cinereum, over which it spreads for some little distance, and his personal bias appears to be in favour of an effect on the gland itself. The remaining third of the volume deals with the pineal body, pancreas, and sex glands; a very full account is given of each. The method of incorporating in the text full references to recent experimental work adds much to its value. In the section devoted to the ovary there is no mention of the work of Allen and Doisy in the preparation of ovarian extracts.

Clinicians as well as research workers will appreciate this treatise.

JOURNALS.

INDIAN JOURNAL OF MEDICAL RESEARCH. Vol. XIV. No. 2.—Of the 21 contributions to this number it is possible to select some papers of more than ordinary interest. L. E. Napier is now able to present an analysis of the first 104 cases of kala-azar treated with stibosan (von Heyden, 471). The mean dose of this drug required for a cure is 4·0 g.; individual injections of 0·3 g. appear to be well tolerated.—Prof. F. M. Marras, of Port Said, describes a rapid method for the diagnosis of plague. By adding a small quantity of agglutinating anti-plague serum to a solution of sugars, such as lævulose, glucose, and mannite, he obtained a marked acceleration of the fermentation and could ascertain at the same time the specificity of the bacillus by microscopic agglutination.—Major-General T. H. Symons, I.M.S., describes an epidemic of Tick fever due to *Piroplasma gibsoni* amongst a kennel of foxhounds belonging to the Madras hunt. The actual tick-vector has not been incriminated. Whilst intravenous salvarsan is a fairly efficient remedy, the recently introduced tryparsamide seems to be superior.—H. E. Shortt, P. T. Barraud, and A. C. Craighead contribute a detailed article on a massive infection of the buccal cavity of *Phlebotomus argentipes* with *Herpetomonas donovani* artificially fed. In a separate contribution the same authors record the capture in a heavily infected kala-azar house of a naturally infected specimen of this sandfly. The significance of the findings is obvious and points to the assumption that the monsoon period is one during which infection with the parasite of kala-azar may be acquired and that the sandfly is the transmitting agent.—R. McCarrison writes upon Lathyrism in the Gilgit Agency, in which he describes an outbreak of this curious disease due to the ingestion of millet grown on soil which had received no manurial treatment for many years.—Asa C. Chandler and V. T. Korke contribute papers of helminthological interest.

A HOSPITAL ON WHEELS.—Dr. H. Bailey, medical officer of health for Horsforth, in the West Riding, suggests the possibility of utilising a portable hospital, on wheels or otherwise, for the use of single patients in outlying districts where the house accommodation is unsuitable or where it is found impossible to remove the patient safely. "A caravan," Dr. Bailey says, "having ample accommodation for nurse and patient would prove a great boon, and could be got ready with little more trouble than that required for the preparation of a fire-brigade engine."

THE LANCET.

LONDON: SATURDAY, JANUARY 22, 1927.

HEALTH INSURANCE FUNDS.[1]

THE second valuation of the assets and liabilities of societies approved under the National Health Insurance Acts has given the Government Actuary an opportunity of setting out the financial basis of the health insurance scheme which, granted certain conditions to be mentioned later, is one of undoubted strength. The audit itself has been laborious enough, for there are more than 8000 societies (reckoning the branches of large societies as separate units) comprising some 15 million members, and the valuation has taken account of the sex, employment, present age, and probability of survival of each of these members, as well as of the fact that the amount of sickness increases among them (from one week at the lowest to 15 weeks in the year at the highest) as age increases, while the number of persons entitled to benefit as regularly diminishes. Such a valuation, although based on experience of the past, relates to the future, and involves the recognition and consideration of all the risks and changes which the future may bring. The capital credits of all these societies at the valuation date (the last day of 1922 for the smaller societies, of 1923 for the larger) amounted to nearly £190 million, of which £5·8 million has been allotted to contingencies and £2·4 million to administration. The total surplus at the same date was £42·4 million, being an average profit of £2 16*s.* 8*d.* a member. Not that all the societies were in the happy position of making a profit on their labours, for 134 of them, comprising 228,000 members, showed an average deficiency of 8*s.* a member—it is one of the demerits of the present system that certain groups of insured persons through no fault of their own obtain less benefits than do others, although, of course, no member is deprived of the minimum benefit guaranteed to him under the Acts. The existence of a profit of well over £50 million on the working of the health insurance system during the first 11 years of its existence is striking evidence of the acumen of those who drafted it; and, secondarily, of the remarkably high level of good health among employed workers. The English group of societies shows up the best in this respect, Scottish, Northern Irish and Welsh following in descending order. As has long been surmised, it is the insured men who bring profit into the scheme, for during the inter-valuation period the cost of sickness and disablement benefits yielded an average profit on the estimates of £1 7*s.* 6*d.* a head in the case of men and of barely 6*s.* a head in the case of women, while a group such as the Industrial Assurance and Collecting Societies, containing 43 per cent. of women members, has a small disposable surplus compared with the Trades-Union group, containing only 19 per cent. of women workers—only about one-half in fact.

It is not the intention of the Commissioners to distribute the whole of this enormous surplus during the next five years. Sir ALFRED WATSON is a cautious person and foresees the unlikelihood of so large a balance being available five years hence, and he counsels not to give more additional benefits than there is reasonable expectation of maintaining. The total distributable sum is therefore fixed at £27 million, in which 97 per cent. of the total members are entitled to participate; of this sum £18·3 million will be absorbed by additions to the statutory money benefits, leaving £8·8 million for additional benefits in other forms, or approximately 3*s.* 7*d.* per insured person per year. In the case of more than one-half of the total insured population the surplus available for distribution is sufficient to provide additional sickness benefit of 5*s.* a week (it is now 15*s.* for men and 12*s.* for women) with corresponding increase in disablement and maternity benefits, leaving 5*s.* 7*d.* a year for other forms of benefit. Disablement benefit has been making large inroads on the fund during the inter-valuation period; while the claims of men rose from 42 to 74 per cent. of expectation, it increased in the case of women from 81 to 146, the excess in the claims of women being the explanation of the inferior position shown by women's societies in the valuation. The financial basis is now to be altered in accordance with this experience so as to provide for an expenditure on sickness and disablement in the case of women at a rate 60 per cent. greater than on the basis for men. Although there is no occupational classification of insured persons, certain types of occupation (strongly represented in certain societies) have been shown to carry heavy sickness rates, but the valuer explains that it is in the more arduous occupations that capacity for work has to be measured by more exacting standards of physical fitness. The valuation also throws some light on the relation of child-bearing to employment, for the birth-rate among married women who are industrially employed is seen to be little more than one-half of that among the whole class of married women. The figures also prove an average unemployment during the three years 1921–23 of 16 per cent. of the whole membership. These are some of the facts which will interest medical men and should induce them to read as a whole a report which so clearly exposes a complex financial scheme.

Sir ALFRED WATSON concludes that there is a reasonable expectation of the continuance of additional benefits, provided that certain conditions are fulfilled: first, that a high standard of administration by the approved societies is maintained; secondly, that the full coöperation of the medical profession in regard to the certification of claims is ensured; and, thirdly, that such unfavourable visitations as that which has been encountered in the present year prove to be transient. Obviously two of these factors are not within the competence of the medical profession to arrange. In regard to the certification of claims, there is the paradox that during the recent period of industrial strife, although there was no manifest increase of general sickness, there was a huge relative increase in sickness benefit, some societies paying three, four, or even five times as much in the 1926 period as in the corresponding period of 1925. That is a problem which did not begin in May, 1926, nor did it end with the resolution of the mining dispute. The experience of the old friendly societies was that every period of temporary distress in the economic world meant an increase of sickness claims. Unemployment insurance, poor relief, and child welfare expenditure all showed simultaneous increase, and it is obvious that greater

[1] National Health Insurance. Report by the Government Actuary on the Second Valuation of the Assets and Liabilities of Approved Societies. Cmd. 2785. H.M. Stationery Office. 1927. 2*s.* 6*d.*

stringency in certification would afford no complete protection to health insurance funds. The insured population will have to learn that they are contributing to a fund of their own for certain definite and desirable purposes, that this fund is not unlimited, and that the more they ask for trivial complaints the less likely becomes any extension of the scheme to include specialist and hospital treatment. The last seven months have been indeed a searching time for the principle of contributory insurance as a method of financing medical service, and for the health of the coming generations it may be that schemes of additional benefit will have to be put on a less uncertain footing than the amount of surplus accruing at five-yearly valuations.

SOME PROBLEMS OF IMMUNITY IN TUBERCULOSIS.

THE scientific beliefs of one generation are frequently anathema to the next. In a paper read at the recent Tuberculosis Week-end Conference [1] in London and published in our present issue, Dr. GEORG SCHRÖDER, one of the most experienced of sanatorium directors, discusses some of the problems of immunity in tuberculosis, which appear to be not much nearer solution now than they were a generation since. Thirty-five years ago ROBERT KOCH introduced his "lymph," which soon came to be known as tuberculin, and opinion is still sharply divided as to its therapeutic value and its mode of action. It might be difficult to determine the extent of its use at the present time as compared with, say, 20 years ago, but judging from the number of original papers written and published on the subject there is no sign of complete disbelief in its efficacy, though there is a vast deal of healthy agnosticism. Dr. SCHRÖDER would presumably include tuberculin amongst the other so-called specifics which cannot be "absolutely relied upon for treatment or for prophylaxis." Probably few clinicians—and still fewer immunologists—nowadays could be found to subscribe to the original view of KOCH'S day that tuberculin is a true antigen in EHRLICH'S meaning of the word, generating a specific antibody to tuberculosis. It is some years since A. WOLFF-EISNER suggested that, in clinical tuberculosis, there is an increased sensitiveness not only to tuberculin but also to protein-split products in general, and the tuberculin reaction seems now to be generally accepted as not specific in the narrow acceptation of that word. Dr. SCHRÖDER goes further in suggesting that tuberculin, by acting as an irritant of tuberculous tissue, promotes the "natural disintegration of the focus of disease." A similar view has been advanced in various quarters as an explanation of the action of sanocrysin and other chemotherapeutic remedies. If this view be correct the question naturally arises, What relation has this disintegrating action to the formation of connective tissue in a chronic tuberculous focus? Dr. SCHRÖDER attempts an answer with the explanation that the collateral zone of inflammation is protective, and that when the stimuli are not too strong connective tissue is formed, as a result of stimulus, in the reticulo-endothelial tissues surrounding the avascular tubercle. This theory is not new, but it is a sign of the times that it should be advanced now in so many quarters as a modification of the pure and unadulterated doctrine of tuberculin specificity on which scientists staked their reputation a generation ago.

[1] THE LANCET, 1926, ii., 1134.

If it be assumed—and it is a large assumption—that a tuberculous focus needs a stimulus to disintegrate the tuberculous tissue and promote fibrous tissue formation, does it necessarily follow that tuberculin—or for that matter any other foreign protein or chemotherapeutic remedy—can supply that stimulus in a way which the tubercle bacillus itself cannot? The available evidence is all too vague for a categoric reply. Indeed, the whole question is a good example of the loose way in which the word specific is often used both by sanocrysin and by tuberculin advocates. In the case of tuberculin attention has, for the moment, been directed to the possibility of standardising the product on immunological lines. The questionnaire recently issued by the Health Section of the League of Nations has elicited much interesting information and has stimulated research, but it has revealed no consensus of opinion. There are at least four methods of standardisation in use, giving different results, and until the immunologist can get down to a basic standard the clinical records of tuberculin are really not comparable one with the other. A further pertinent question dealt with by Dr. SCHRÖDER is that of allergy. He makes the point that "the stronger the allergy the greater the resistance," in other words, allergic behaviour and resistance to infection run, to a certain extent, on parallel lines. C. v. PIRQUET also has pointed out that in measles the positive allergic reaction to tuberculosis, which he, too, regards as protective, may be abolished. If this be so, it would afford support to the clinical finding that an attack of measles increases the susceptibility to tuberculosis. A further instance of diminished allergy is quoted in the cases of tuberculous meningitis observed in HAMBURGER'S clinic. Dr. SCHRÖDER deduces that cases showing high allergic response are likely to do well without specific therapy, whereas those with a low allergic reaction may be helped by such treatment. Unfortunately, allergy is itself an ill-defined conception in clinical practice, and attempts to measure allergic response by laboratory means have not been very successful. Dr. SCHRÖDER mentions numerous tests which have been used, from the older graduated Pirquet reaction to the newer sedimentation test. Some of them are probably more sensitive and illuminating than the general run of temperature charts, but they are often no more specific than is pyrexia, and until a sufficiently large series of quasi-continuous observations can be made on individual patients their practical utility as a means of gauging resistance or allergic response must be limited.

A DISCUSSION ON EPILEPSY.

ON another page will be found a report of the discussion on epilepsy, which occupied the Section of Neurology of the Royal Society of Medicine last week. A short time ago we summarised the presidential address of Dr. ALDREN TURNER, on the same subject, delivered before the Section of Psychiatry of the Society. It may accordingly be convenient to take this opportunity of reviewing some of the questions presented by a perplexing malady, still surrounded by obscurities that, in view of its history and of its frequency, constitute no little reproach to medical science and art. By way of preface, it is only right to point out that epilepsy occupies a peculiar if not unique position among morbid states, and suffers from the paradoxical disadvantage of being an age-old "disease." Known from the earliest times as "the falling sickness," a conception which has coloured

medical opinion in regard to it ever since, "epilepsy" is at once much too manifold to be a single "disease" and too restricted for the purposes of the clinician. It is an ailment, in the sense of the German equivalent "Sucht," but in no sense of the term can it be regarded as a nosological entity complete in itself. No one was more aware of the handicap imposed on research by terminological obstacles of this kind than HUGHLINGS JACKSON, who was wont to speak of "the epilepsies," thereby to indicate the semiological rather than the pathological meaning of the word. In truth, epilepsy is no more than a descriptive term for one symptom of a general class of symptoms brought about by a variety of pathological states, and when in the Registrar-General's Reports we find it put down as responsible annually for a large number of deaths, on the same level precisely as cerebral tumour or pneumonia, we can realise the urgent need of revision of current opinions and the mountain of prejudice which will have to be moved if modern knowledge is ever to prevail.

To envisage the problem in its appropriate setting, we have to begin with the proposition that a fit is a transient disturbance of neural function, possessing as a rule the features of suddenness or abruptness, disorderliness, and severity; it may or may not be accompanied with loss of consciousness, be preceded by an aura or warning, and followed by a period of exhaustion. Fits may, or may not, recur. In respect of each one of these components so much symptomatological latitude is possible that comprehensive definition can scarcely be reached. Examined physiologically, a fit represents the setting into motion, or the release from control, of a quantity of potential, static, neural energy, housed in neurones so linked with each other that once the process is started it may spread both laterally, on a given level, and downward to levels of a lower physiological grade. Moreover, theoretically any group of neurones, at any level, may form the site of the initial excitation or release, hence clinical variants are numerous. Careful observation of the phenomena during the brief period of their existence makes it clear in some instances that pontine, bulbar, and possibly spinal mechanisms are involved; in others, units of the rolandic motor area are the first to exhibit activity; in still others, the type of movement strongly suggests irritation or decontrol of cortical areas of considerably higher physiological grade. If, for the sake of harmony, we can conceive of psychical energy as being but a form of physical energy; if, adopting the principle of emergence, we can believe that consciousness and reflective thought arise from the complex functioning of neurones, and do not constitute an activity of another order than the neural—then we can bring into line with the above-mentioned physiological processes of the fit those cases, and they are many, in which symptoms belonging to the psychical series are in evidence. For the aura of the fit is in all instances a conscious sensation and, therefore, a psychical thing; yet it is no less integral an accompaniment of the fit (should it as a fact be present) than the subsequent unconsciousness or the motor display. Of it, too, we might then conceive as being a phenomenon of release or of excitation; and we should not have any difficulty in unifying the multiplex semiology of epilepsy, from aura to cyanosis, from finger-twitching to vesical evacuation, as standing only for differences in degree, range, and site, of one and the same kind of dysfunction. Contrasts between hysterical and epileptic seizures would lose their force and point, and this would be an unalloyed gain to the scientific neurologist, though, naturally, prevailing clinical distinctions would not thereby be obliterated. Finally, in this connexion, it would not be arduous to correlate the manifestations of petit mal with those of the major variety, for they would represent a minor degree of disorder of function of neurones subserving consciousness, without, or with a minimal, spread to those whose activities are motor. Thus, too, fits without actual convulsion would be better understood.

Another proposition well worth bearing in mind is to the effect that epileptic symptoms are the outcome of the activation of normal, healthy neural mechanism, and can in no sense be prima facie evidence of the existence of disease. The arguments in favour of this view need scarcely be summarised. A moment's thought will show that complete functional restitution after a fit eliminates all question of structural defect. Convulsants of the absinthe and thujone class produce fits in perfectly normal laboratory animals. Clinical data might be adduced in abundance to support the contention. Wherein, then, does the abnormal element consist? The key to this particular aspect of the problem is to be sought in a survey of the conditions as a sequel to the presence or recurrence of which neural energy is allowed uncontrolled liberation and rapidly passes along and down neuronic lines (and up, too, if certain data which cannot here be examined are accepted). Ignorant as we are of the normal processes of volitional innervation, we are quite at a loss when an attempt is made to visualise or conceive otherwise of the exact mechanism of de-inhibition. But some help is forthcoming from a consideration of the organic conditions apt to be associated with the appearance of epileptic symptoms. Fits are prone to develop with locally altered vascular conditions (as in cerebral embolism, thrombosis, hæmorrhage), with more general states of intracranial pressure (in cerebral tumours), or of a toxic character (uræmia, eclampsia, artificial convulsants). For the vast group of epilepsy of unknown origin we must by analogy postulate the existence of a factor, or, more probably, of factors which are capable of exercising the same effect on nerve-cell constellations as do the mechanical, vascular, or toxic factors just mentioned. That they may on occasion be constituted by some, as yet, ill-recognised biochemical change is far from improbable, but not inherently more feasible than that in other instances stimuli of a psychical order should suffice equally well to cause a similar energisation, or, rather, a setting free of energy existing in potentia. Approach to the perplexities offered by epilepsy is, therefore, welcome from any side, chemical or mental, vascular or neural. But none can ever be acceptable which ignores the complexity of the subject, fails to embrace the multiplicity of clinical variants, or does not keep steadily in view the problem as a whole.

MEMBERS of the profession will be glad to learn that a presentation is to be made to Sir Berkeley Moynihan on his retirement from the active staff of the University and General Infirmary at Leeds. Sir Berkeley Moynihan is the first surgeon from the provinces to be elected President of the Royal College of Surgeons of England, and the work which led to his election is known all over the world and has added distinction to British surgery. A committee has been formed, of which the Lord Mayor of Leeds is chairman and Mr. L. R. Braithwaite vice-chairman, and its intention is to collect subscriptions for a portrait of Sir Berkeley Moynihan to be placed in the board room of the General Infirmary. Whilst the smallest contribution will be welcome, it is suggested that no individual amount should exceed £5.

Annotations.

"Ne quid nimis."

VITAL STATISTICS FOR 1926.

THE Registrar-General has issued a provisional statement of the figures for birth-rate, death-rate, and infantile mortality during the year 1926.

—	Birth-rate.	Death-rate.	Infant mortality-rate.
England and Wales ..	17·8	11·6	70
105 county boroughs and great towns including London	18·2	11·6	73
158 smaller towns	17·6	10·6	67
London	17·1	11·6	64

The smaller towns are those with an estimated population in 1921 of 20,000–50,000. The (crude) death-rate for England and Wales relates to the whole population, but that for London and the two groups of towns to the civil population only. Birth-rate and death-rate are per 1000 population, infant mortality-rate per 1000 births.

The Registrar-General remarks that the birth-rate is 0·5 per 1000 below that of 1925, and that, with the exception of the rate in 1918 (the last year of the war), it is the lowest recorded. The death-rate is 0·6 per 1000 below that recorded in the previous year and is equal to that of 1923, the lowest recorded rate. The infantile mortality-rate is 5 per 1000 births below that of 1925, but 1 per 1000 above that of 1923, the lowest on record. These provisional figures, which are not likely to require substantial modification, have been issued for the information of medical officers of health.

THE FIRST WEEK OF 1927.

THE Registrar-General's return for the first week of the present year has just been issued, and we take the opportunity of calling the attention of the medical profession as a whole to a document whose careful study will keep the practitioner informed of the prevalence and spread of infectious disease throughout England and Wales.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 412 (previous week 342); scarlet fever, 1468; diphtheria, 1179; enteric fever, 37; pneumonia, 2033; puerperal fever, 54; puerperal pyrexia, 139; cerebro-spinal fever, 7; acute poliomyelitis, 24; acute polio-encephalitis, 3; encephalitis lethargica, 39; dysentery, 6; ophthalmia neonatorum, 112.

The cases of small-pox were reported from the following counties: Durham, 284 (11 from Gateshead, the remainder from 22 urban and rural districts, the highest figures being Chester-le-Street R.D. 40, Crook 32, Brandon and Byshottles 30, Lanchester 27, Hetton 22, Willington 21, Shildon 19, Jarrow 14, Easington 12, and Tanfield 10); Lancaster, 1 (Ashton-under-Lyne); Lincoln-Lindsey, 7 (Gainsborough); Northumberland, 5 (Newcastle 1, Tynemouth 2, Ashington 1, Castle Ward R.D. 1); Nottingham, 1 (Huthwaite); Yorks West Riding, 91 (20 from Sheffield, the remainder from eight urban and rural districts, the highest figures being Keighley 33, Mexborough 15, and Doncaster 10). The West Riding of Yorkshire reported last week 61, and the previous week 45 cases. Since this return was made up ten cases of small-pox have been reported from Southport and many fresh cases from Sheffield. A fatal case has been reported from Mexborough.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 1 (0) from enteric fever, 28 (0) from measles, 4 (0) from scarlet fever, 60 (16) from whooping-cough, 46 (8) from diphtheria, 51 (12) from diarrhœa and enteritis under 2 years, and 172 (72) from influenza. The figures in parentheses are those for London itself. The influenza deaths in the last five returns have been slowly rising, thus: 52, 60, 69, 86, 172—and 326 has been given verbally as the figure for the next week.

CRIPPLED CHILDREN IN CARLISLE.

A VOLUNTARY clinic for the treatment of crippled children was opened in Carlisle just over a year ago. Orthopædic work amongst the children of school age in Cumberland had been carried on for some time under the County Council; but the City Council, which is a separate authority for purposes of education and health, had not shown itself able to initiate work of this kind under existing financial conditions. As, however, the need was obvious the Council of Social Service took the matter up. The medical men of the city were invited to a conference, and promised assistance; while the Hon. Staff of the Cumberland Infirmary undertook to supervise the work. The Council then raised a sum of £500 to get the work started in premises provided by the Trustees of St. Cuthbert's Hall. A trained nurse was secured from the Oswestry Orthopædic Hospital, and the clinic was opened one day a week with an initial attendance of about 15 children, the nurse visiting the children in their homes on other days of the week. A little later the clinic was opened on two other mornings of the week for massage. By the end of the year there were 73 cripples attending the clinic; 1558 attendances had been made, and 1024 visits paid by the nurse to the homes of the children, 195 plasters had been put on, and 72 splints and instruments of various kinds supplied. These latter are supplied by the Committee, but the parents are requested to contribute towards the cost by weekly payments according to their means. Several cases found to require institutional treatment were sent to Oswestry, others requiring operations to the Cumberland Infirmary. The Health Department of the city arranged for the supply of virol at cost price in certain cases. At the outset a considerable proportion of the cases wese found to be long-standing and in need of prolonged treatment; the more recent cases, of course, yield to treatment more readily. Several cripples who previously had no earning capacity are now working in factories in the city, and providing for themselves; while others who previously were on crutches, and apparently likely to be so permanently, are now walking on their own feet. Assistance in the case of ex-servicemen's children has been granted from the United Services fund and other sources. The example of Carlisle might well be followed by other places in which the sanitary and education authorities have failed to provide for the curative treatment of their cripples.

METHODS OF TREATMENT IN EPIDEMIC ENCEPHALITIS.

EPIDEMIC encephalitis made its appearance in the Philippine Islands in 1918, when three cases were recognised. In 1922 a severe epidemic of the disease occurred, cases being reported from different parts of the Islands. The first epidemic was of the lethargic type; in the second one the myoclonic type was predominant. Dr. Agerico B. M. Sison[1] made a comparative study of the different methods of treatment in the second epidemic. His first efforts were directed towards the correction of the continuous myoclonic movements which were the most distressing symptoms. Various nerve sedatives were used, such as veronal, trional, luminal, hyoscine hydrobromide, morphine sulphate and polybromide mixtures. These did not control the movements, nor had intramuscular injections of urotropine and of quinine any apparent effect. Ether anæsthesia gave temporary relief, which in one case proved permanent, the myoclonic movements not returning on the patient's recovery from anæsthesia. In the treatment of acute cases of epidemic encephalitis Dr. Sison speaks favourably of intra-spinal injection of serum obtained from patients who have just

[1] Comparative Study of the Different Methods of Treatment in Epidemic Encephalitis. Far Eastern Association of Tropical Medicine. Transactions of the Sixth Congress (1925), Tokyo, vol. ii., p. 513.

recovered from the disease. The donor must have a negative Wasserman reaction and be entirely free from all acute symptoms such as fever, myoclonias, diplopia, respiratory catarrh. With strict aseptic and antiseptic precautions, 30 c.cm. of blood are withdrawn by means of a syringe every three or four days from the donor; the blood is then transferred to a centrifuge tube and the serum allowed to separate by standing or centrifugalisation. The supernatant serum, which should be perfectly clear, is next transferred into ampoules for 6 c.cm. doses. Controls are made with bouillon cultures and any ampoule showing cloudiness or serum on the surface is discarded. The serum will keep in ampoules in the ice-box for a period of six months. The treatment is performed every three or four days and repeated according to the indications presented by the patient. After withdrawing 10 to 30 c.cm. of cerebro-spinal fluid, 6 c.cm. of the serum is injected intraspinally. Immediately after the intraspinal injection the foot of the bed is raised one foot high, in order to avoid a too sudden and abrupt diminution of the intracranial pressure. Adrenalin chloride (1 in 1000) 0.5 c.cm. is injected hypodermically to minimise the risk of anaphylactic shock. A few hours after the injection rise of temperature occurs to 38°-39° C., with lumbar pain, headache, and hyperæsthesia along the lower extremities, the symptoms lasting for three to four days. Dr. Sison also tried inoculation with benign tertian malaria, but not in a sufficient number of cases to warrant any conclusion. No improvement from any therapeutic measure was observed in patients suffering from the Parkinsonian syndrome.

SUMMER DIARRHŒA—A PREVISION.

UNTIL a few years ago it was taken for granted that all diarrhœa in the summer-time was the direct result of an infection and could be prevented by cleanliness alone. Very obviously the proportion of true infective diarrhœa varies with the climate of the country and with its advance in the science of public health. We read with interest in American and Australian journals of blood and mucus being ordinarily found in the stools of infants with diarrhœa, whereas these manifestations are very rare in this country. Summer diarrhœa is not the cause of high infant mortality in Scotland—probably because of the climate—and it is well, therefore, to realise that the problem varies in different places. There appears to be very little ground for assuming that an infection plays a primary part in the vast majority of these cases in the British Isles; possibly not more than 1 in 10 is infected with the true pathogenic organism. The clinical picture in such a case is clear-cut, with its profuse blood-stained mucous stools and high temperature. All efforts at aborting such a case by the usual means fail utterly, and it runs its full course, just as typhoid does, regardless of any known treatment. Of the remaining 90 per cent., a few are symptomatic diarrhœa—that is, general infections to which the child reacts by profuse diarrhœa. These cases are seen throughout the year with middle-ear disease, pyelitis, or during influenzal epidemics, but represent a very small proportion only. Marriot [1] has recently pointed out a most interesting group of cases suffering from acute diarrhœa which fail to react to any treatment, waste rapidly, and have a continuous high temperature. Only the most careful examination reveals a subacute infection of the mastoid bone on one or both sides, and operative treatment seems to be indicated. The incidence of otitis media and mastoid disease in this country is much less than in America, and this complication is probably an extreme rarity here.

The vast majority of cases of so-called summer diarrhœa are purely dietetic in origin—that is, they are preventable. The children who suffer from this disorder, as Dr. Ronald Carter points out in a paper which we publish on p. 176, fall into two main groups: (1) perfectly healthy children, and (2) those who have been chronically ill. In the infant up to, or over the normal weight, an acute bilious attack very often occurs because of overfeeding, especially on fats. Infants fed on full-cream mixtures, or breast-fed babies not given sufficient water for their needs in warm weather, make up the majority of such cases, and their treatment in summer is just what it would be at any other time of the year—a purge, starvation, except for the addition of a little sugar, and gradual resumption of diet. Such cases are seen in the well-to-do, but are so promptly dealt with that the mortality remains negligible. Among the ignorant, however, it is often several days before advice is sought, and meanwhile attempts have been made to continue with the ordinary diet, so that a fatal issue is common. The other group is formed by those children who have been chronically underweight, or have failed to gain in weight; they have had slight recurring attacks of undigested or acid stools, even before the warm weather, and they may be termed the chronic indigestion group. The average infant requires less food—that is, a smaller caloric intake—during the summer months than in the winter. This is especially true if it is overclad or confined in a warm still atmosphere, such as is found in the poorer districts of great cities. The digestive tract, which has been struggling to cope with and metabolise sufficient food for the infant's requirements during the winter months, becomes hopelessly overloaded unless the supply of food be curtailed during the summer. Recent work on gastric acidity [2] in infancy has shown that the infant which, for any reason whatever, is below the normal standard of health, tends to have a decrease in its gastric function, and it is reasonable to presume that there is a similar decrease throughout the whole intestinal tract. It can be readily seen, therefore, how overfeeding in an infant with chronic indigestion during the summer months produces a sudden catastrophe. When we turn to the prevention of summer diarrhœa we must obviously concentrate on the feeding and care of the infant. To those familiar with the problem there seems little doubt that the welfare movement has contributed by far the most towards the present enormous reduction of diarrhœa, and, therefore, of infant mortality. The education of the mother in all branches of mothercraft is all-important. It should be asked, however, where the welfare movement fails in respect of summer diarrhœa, or, to put it in another way, how could the situation in summer-time be coped with at the welfare centres? Generally these centres are open for consultations only once or twice in the week, and it is in the intervals between visits that calamities occur. Some few centres even close their doors during the summer months because of reduced attendance on the part of the mothers, whereas actually they should arrange to sit daily during the months of July, August, and September. If the situation be grasped and the mother advised promptly, even in the frail subnormal infants gross intolerance to food may be prevented.

Having made certain that continuous expert advice is available for every well baby, it must be considered what advice is to be given. The mother should be told the advantages of keeping her infant lightly clad and cool throughout the day; she should be told that her child needs frequent drinks of water at regular intervals throughout the day and night, quantities equal to at least half the total of its feeds being offered throughout the warm months, and she should be warned against any attempt to urge food on the baby. In April, May, and June an effort to raise the child's tolerance for sunshine should be made, and it should be exposed to the direct rays of the sun before their strength becomes too great. It is notorious that the sunburnt babies rarely develop summer diarrhœa. In the hot, close days of the year the mother must transport her infant to the open spaces for part of the day. Heat alone is not as much to be feared as still, devitalised air. Those children on full-cream, dried, or fresh milk mixtures should be

[1] American Jour. Dis. Child., 1925.

[2] Arch. Dis. in Childhood, 1926, vol. i., No. 4.

quickly transferred to half-cream or skimmed-milk mixtures at any sign of intolerance to food, the sugar being also reduced to some extent. Every infant who is failing to gain weight during the warm weather ought to be looked on as a potential victim of summer diarrhœa. The boiling of all bottles, teats, and cooking utensils, and the prevention of contamination of the food, should be stressed but not placed first. Dr. Ronald Carter's method of early notification of such cases with visiting of their homes by trained health-visitors is admirable. At the onset a simple purge with castor oil, which tends to leave the infant constipated, and 24 hours—not longer—on half-strength saline or plain boiled water containing a small amount of sugar, give the stomach and bowel an opportunity to recover. The return to a normal diet should be gradual, and a diet low in fat is strongly indicated. Commercially supplied dried buttermilk is very useful in the early days, and skimmed lactic-acid milk made according to[3] Marriott's formula is also valuable. This formula is as follows: to one pint of boiled skimmed milk and half a pint of boiled water, 60 drops of (B.P.) lactic acid are added drop by drop, the mixture being stirred continuously. This mixture must not be heated above blood temperature or it will curdle. A suitable quantity of sugar is added, and feeds of appropriate size are given. Severe cases of summer diarrhœa must be treated in institutions. If summer diarrhœa could be made universally notifiable the mortality would undoubtedly be greatly lowered. The prevention, however, lies in further educating the public to the welfare movement, and in the value of good hygiene and feeding. In this way the proportion of infants underweight and ailing should grow less, and it is these cases which are most difficult to deal with medically.

THE MEDICAL DEPARTMENT OF THE U.S. ARMY.

Major-General Merritte Weber Ireland, who will be remembered here as Chief Surgeon of the U.S. Expeditionary Force in 1918, has been reappointed Surgeon of the Army of the United States for a third period of four years. This presages, it is believed, considerable changes in the Medical Department of that army, which in time of war aggregates 20 per cent. of all officers mobilised and 10 per cent. of all enlisted men. The Surgeon-General has written[4] to the Adjutant-General stating that the acute shortage of personnel has become well-nigh intolerable, the staff being over-worked to the limit of human endurance, in spite of the fact that the Medical Department is an asset rather than a liability, and therefore should not be unduly limited, for it is a national insurance, saving life, preventing disease, and diminishing claims for pension or compensation. The Surgeon-General proposes that the Medical Department shall consist of six general officers (one major-general, five brigadier-generals—three for the Medical Corps, one dental, one veterinary), and five sections: (1) the *Medical Corps* of 1820 officers, from colonel downwards; (2) the *Dental Corps* of 560 officers; (3) the *Veterinary Corps* of 250 officers and 1500 other ranks; (4) the *Nurse Corps* of 700, its superintendent with relative rank as colonel, chief nurses as captains, head nurses as first, and nurses as second lieutenants; (5) the *Medical Auxiliary Corps*, 140 officers and 13,500 other ranks, corresponding to the orderlies of the R.A.M.C., though separated from the medical officers, who are by themselves in the Medical Corps. The officers of the auxiliary corps seem to be those corresponding to the quartermasters, R.A.M.C., along with the non-medical officers—surveyors, engineers, chemists—who are given commissions within the medical department to advance the hygiene of the army, and traders in medical supplies, to facilitate the acquirement of the necessary medical stores, especially after mobilisation. As there is no war at present, only 544 officers and 2050 additional men are required at once. The medical department of the U.S. Army serves also the Air Corps, "contract physicians" (no longer "contract surgeons") being employed as required. "Surgeon" is being employed as a staff title, not as a mark of professional attainment.

[3] Amer. Jour. Dis. Child., 1924.
[4] Military Surgeon, December, 1926, p. 780.

NIELS THORKILD ROVSING.

THE death is announced from Copenhagen of Dr. Thorkild Rovsing, professor of clinical surgery and sometime Rector of the University, at the early age of 64 years. He died in his own private hospital after operation for cancer of the throat. Prof. Rovsing was born in 1862 at Flensborg, was educated at Copenhagen, and entering the surgical service of the Royal Frederick Hospital, soon became its leading spirit on the surgical side, and finally chairman of the board of management. He was for a long while President of the Danish Surgical Society and a corresponding member of medical societies in the neighbouring countries. His first important publication dealt with inflammations of the urinary bladder, and between 1895 and 1910 appeared the three volumes of his standard work on the surgical diseases of the urinary organs. Later he published a volume on abdominal surgery. His work on appendicitis attached his name to a diagnostic symptom, about the value of which there was a sharp discussion 20 years ago. More recently his interest centred on the gall-bladder, and he collected material wherewith to refute Naunyn's teaching that stones only arise in an infected bladder; analysis of his own 530 cases all went to show that there is a small nucleus of pigment at the core of every stone, while in more than half the cases the contents of the gall-bladder were sterile. As a result of this work he remained a stalwart opponent of cholecystectomy. In some other directions his surgical methods attracted notice, as in his treatment of arthritis by injections of vaseline and an ingenious method of gastropexy. His literary activities were many-sided, for he edited with great success the *Hospitalstidende*, a weekly journal containing original papers and reviews of medical literature. Latterly he took a prominent part in the campaign against cancer in Denmark, and was for a time a member of the short-lived Government of 1920, although, happily for surgery, his political career lasted only a few days. Dr. Rovsing's two sons are in the medical profession. His death removes one of the principal attractions of the Copenhagen Medical School to visitors from abroad.

DENTAL BENEFIT.

THE position of dental treatment as an additional benefit under the National Health Insurance Acts seems to have become remarkably stable, if it may be judged from the various circulars issued by the Ministry of Health and the Board of Health for Scotland. Circular A.S.259, the most recent of these documents, sets forth the latest decisions arrived at by the Dental Benefit Joint Committee, and it appears from them that the system evolved for administration of voluntary benefit bears a fairly close resemblance to that which governs statutory medical benefit. The dental societies have apparently been able to set up a representative committee to look after the interests of dentists, and this will work in much the same way as the panel committee works under the medical scheme. The Dental Benefit Joint Committee has functions generally analogous to those of local insurance committees, and has a subcommittee whose duties resemble those of the medical services subcommittee. Lastly come the regional dental officers, whose posts are, of course, modelled on those of regional medical officers; seven of them are now being selected, and will act in areas whose centres will probably be London, Manchester, Birmingham, Leeds, Cardiff, and Glasgow. Except

for a couple of lines in the fourth schedule there is no mention of dental treatment in the National Health Insurance Acts, and the new dental organisation has at present no statutory sanction, but is based on an agreement between representatives of the dental profession and the approved societies. The fact that the Ministry of Health, on the invitation of the Dental Benefit Joint Committee, has actually assumed responsibility for the appointment and control of the regional dental officers seems to indicate that opposition to the new scale of fees shown by certain approved societies is not taken very seriously. Figures available for December of last year show that approved societies representing 73 per cent. of members eligible for dental benefit at once accepted the fees and conditions of service agreed upon by the Dental Benefit Joint Committee. The societies which definitely refused to accept the scale represented only 3 per cent. of eligible insured persons, and the general refusal of the dental profession to give dental treatment on any lower scale, and other considerations, have since resulted in the great majority of the doubtful societies coming into the agreement. It may be taken, therefore, that the initial difficulties of the scheme have been practically overcome, and that a four years' experiment in dental treatment has been launched. Whether a scheme involving the annual expenditure of over £2,000,000 and the professional treatment of over 10,000,000 insured persons ought to be left without some statutory control, by regulations which will have the force of law, is a matter for serious consideration.

DIET AND CANCER.

THE idea that diet is an important ætiological factor in cancer seems to make a strong appeal to the imagination of many writers. We cannot call it an appeal to the scientific imagination because there is little scientific about it. It is not based either on considerations of the pathology of the disease or on trustworthy clinical, experimental or statistical evidence. The argument begins as a rule with the assertion that cancer is rare in some particular community. The native races of Central Africa or the Esquimaux are most frequently quoted in support of the contention. Since there are no vital statistics available in communities such as these, the statement at once puts out of court those inconvenient fellows, the statisticians, and makes it difficult to find anybody who from personal experience might be able to contradict the statement. So the person who makes a statement of that kind is fairly sure of getting a good innings as a "cancer expert" until the statement is investigated and found to be either untrustworthy or incorrect. Even if it were found to be true that certain races have a low incidence of cancer it would not necessarily follow that this is due to dietetic factors, since observations on animals have shown that racial differences are responsible for differences in the susceptibility to malignancy.

It would be a reasonable argument to suggest that dietetic errors may be responsible for cancer of the digestive tract. It is quite feasible that such errors might produce a type of chronic irritation corresponding to that produced by tar, which leads to cancer of the skin to which it is applied. There is at present no evidence in support of a view of this kind. A recent statistical inquiry by Dr. M. Young[1] on the incidence of cancer in men of different social classes has brought to light the interesting fact that cancer of the bowel is more prevalent in men of the best social classes, while cancer of the œsophagus and stomach is higher in men of the lowest social classes. If we assume for the sake of argument that dietetic errors are responsible for cancer of the digestive tract, we would have to conclude that the dietetic errors committed by men of the highest social classes must be debited with the induction of cancer in the bowel and credited with an increased resistance to cancer of the stomach, and vice versa for the dietetic errors committed by men of the lowest social classes. Dr. Young's analysis, therefore, yields no evidence in support of the view that the general susceptibility to cancer of the digestive tract is affected by such dietetic differences as exist between men of the highest and the lowest social classes.

But those who are trying to establish a relation between diet and cancer do not restrict their contentions to argument of this kind; they hold that a carcinoma of the stomach, of the breast, a sarcoma of the bone, and a glioma of the brain may all find their origin in diet. The report on Diet and Cancer by Dr. S. Monckton Copeman and Prof. Major Greenwood just published by the Ministry of Health, which we review in detail in another column, contributes further evidence against the view of an essential relationship between the genesis of cancer and diet. In this case the incidence of cancer in enclosed monastic orders living on a vegetarian diet shows no significant difference from the incidence in the general population, although a very definite assertion to the contrary had been made. The name of Prof. Greenwood is a guarantee of the soundness of the statistical argumentation. For many years Dr. Copeman has been before the public as an out-spoken believer in the importance of diet in cancer. At a meeting of the British Association four years ago he created a sensation in the daily press—if not among the scientific public—by suggesting that a definite relationship existed between diet (especially its content in vitamin A) and cancer. He has treated patients suffering from cancer with a special diet. It is therefore of real significance to find under his signature the following statement which occurs in the final paragraph of the conclusions: "We think a perusal of our report will convince most impartial persons that no scientific value whatever attaches to assertions supported merely by the vague pseudo-statistical evidence customarily cited respecting the rôles of certain articles of common consumption in the genesis of cancer." The authors, however, propose to investigate further the apparent discrepancy noted by the late Dr. Charles Goring between the incidence of cancer in the prison and the general population.

[1] Journal of Hygiene, 1926, xxv., 209.

COD-LIVER OIL AND VITAMIN B.

Two papers recently published,[1] by Erik Agduhr and Axel Höjer, have again brought into prominence the ill-effects of an excess of cod-liver oil in the diet. These authors find that, besides other changes, the heart is chiefly affected and that it shows brown atrophy and vacuolar degeneration of the muscle-cells. Agduhr concludes that these changes are caused by some injurious substance in the cod-liver oil, but Höjer records experiments on rats proving that they are produced, not by a poison in the oil, but by giving it in overdose without simultaneously increasing the amount of vitamin B in the food. The ill-effect of large doses of cod-liver oil was first observed in 1922 by R. H. A. Plimmer and Rosedale [2] during experiments with chicks, when it was found that the harmful action was removed by an increase of marmite (which contains vitamin B) in the food. The same workers [3] have since studied in detail the relation of vitamin B to the quantity of food,[3] and have indicated that the quantity of vitamin B in the food must bear a constant ratio to the quantity of carbohydrate, fat, and protein in the diet. They consider it impossible to speak of the requirement of vitamin B in terms of a daily dose as is usually supposed. It has also been pointed out by Plimmer and Rosedale [4] that deficiency of vitamin B must

[1] Acta Pædiatrica, vol. vi., Fasc. 2.
[2] Biochem. Journal, xvi., 11.
[3] Proc. Roy. Soc. Med., 1926, vol. xix., Sec. Comp. Med., p. 21.
[4] Ibid.

be considered in two different ways, depending upon its degree. They state that if the deficiency is complete, or nearly so, the symptoms of beri-beri result more or less rapidly and end fatally; if, however, the deficiency is only small the typical symptoms of beri-beri do not appear, but in a shorter or longer time there are signs of gastro-intestinal disturbance, appendicitis, and cardiac troubles, which become chronic and may end in death. If these results be accepted it becomes of great importance to know if the ordinary daily diet contains an adequate quantity of vitamin B. Various foods are being tested by Plimmer and Rosedale, and their preliminary data suggest that at least half the daily diet must consist of wholemeal flour or whole cereal or pulses, to avoid symptoms from the heart or gastro-intestinal tract. They state that the everyday diet, consisting mainly of white flour, sugar, fat, and meat, does not contain an ample supply of vitamin B and they consider it very likely that the cardiac disorders, constipation, and gastro-intestinal symptoms nowadays so common are produced by a deficiency of vitamin B in the daily food.

ANÆSTHETIC FATALITIES AND STATISTICS.

THE two contributions relating to anæsthetics (published on the opening page of this issue and p. 173 respectively) give food for serious speculation. In some respects they are so contradictory. The very fact that there should be a post-graduate lecture on anæsthetics is in opposition to Dr. Goodman Levy's affirmative that "little or nothing has been effected in the way of reducing the general liability to death under anæsthetics." It is generally admitted that as regards the safety of anæsthetic administration there is no other factor which rivals in effect the knowledge and experience of the anæsthetist. This must depend to a great extent on his education in the matter, and there has been much advance in education of recent years. Every student nowadays is obliged to acquire a certain amount of training in anæsthetics before he can be correctly signed up for his final examinations, and those who proceed to hold resident appointments generally acquire a really useful amount of practical experience in the giving of anæsthetics. It is quite true that the number of anæsthetic fatalities per annum remains a formidable figure. We have, however, no considerable evidence, supplied by Dr. Levy or elsewhere, that it does not represent a falling proportion when compared with the total number of operations performed. This increases constantly and so, moreover, does the magnitude of the operations—which can be easily judged by an inspection of the daily list of operations at a few leading hospitals. Whereas in the past these lists would have been found to present a large proportion of operations for hernia, varicose veins, and similar comparatively trivial proceedings, to-day they include more generally major abdominal operations and extensive proceedings for the eradication of malignant disease. An increase in the whole number of operations performed, and a notable increase in the severity of these operations, might lead to an increased actual mortality without there being any proportional increase, and without there being any blameworthy defects in the anæsthesia. Much greater operative risks, in fact, are probably run to-day than were ever ventured on by surgeons in the past. They are often rewarded by life-saving, but they are paid for by an increased operative mortality. We are aware that this argument does not meet Dr. Levy's affirmation that many of the deaths that are recorded as occurring under ether were in connexion with trivial operations. No mention, however, is made of the state of the patients at the time. Obviously, even a trivial operation may be an extremely serious affair where the subject of it is in a critical condition from some disorder, very likely unconnected with that for which he is undergoing operation. It is hard to believe—certainly our own observation gives no support to the idea—that there are frequent deaths from the administration of ether to individuals in ordinary health undergoing trivial operations. Dr. Levy begs the question by suggesting that the deaths recorded as arising under ether anæsthesia really occurred owing to the use of some other anæsthetic. In this way, of course, it would be easy to explain away the entire collection of statistics on which his remarks are based. If when ether is mentioned the truth is that chloroform was used, why should it not be true that when the death certificate describes a patient's heart as "normal," it was actually the seat of myocardial degeneration? Nevertheless, we have much sympathy with Dr. Levy's attempt to explain an apparently extraordinary figure. Generally speaking, the increased number of deaths under ether is, of course, due to the enormously increased use of this drug as a routine anæsthetic agent in the place of the chloroform or the "mixture" of the past. It is probably true that some deaths after prolonged ether inhalation arise from an excessive administration, owing to an unsuspecting belief in the complete innocuousness of ether. It should be realised that ether is toxic and can be lethal, even though it is not easy to bring about death on the table in the case of healthy subjects. Conditioned by considerations of this kind the trust in ether is justifiable, and will not, we hope, be shaken.

IMMUNITY IN SYPHILIS.

AN annotation in THE LANCET last week (p. 145) described some experiments on superinfection with syphilis, and it may be of interest to recall some recent observations on immunity to this disease. John Hunter (1810) showed experimentally that when the skin of a person with manifest generalised syphilis is scarified and inoculated with material from a secondary syphilitic lesion no lesion is produced at the site of scarification. This demonstration in vivo was the earliest experimental evidence of acquired resistance to syphilis. Dr. Alan M. Chesney [1] has recently reviewed the recorded observations and experiments of the workers in many countries who have, since Hunter, attempted to solve the problem of immunity in syphilis. Dr. Chesney's own experimental studies of this subject are not the least noteworthy among them. His critical analysis of the protocols of experiments and the conclusions based thereon is a valuable contribution to syphilology. He finds that all the reinoculation experiments carried out upon syphilitic human beings, monkeys and rabbits, since the discovery of *Spirochæta pallida*, show that the host gradually acquires a resistance, more or less incomplete, toward a second infection with the same parasite if the disease be allowed to develop untreated. This resistant state is already present before the primary lesion has healed and it lasts for the rest of the host's life, though subject to periodical fluctuations. Not all tissues of the body, however, share equally in this resistance, and in rabbits it is more effective against homologous than heterologous strains of spirochæte. The passage of time appears to be essential for the acquisition of this resistant state. Neisser's experiments on monkeys led him to the belief that acquired immunity in syphilis depends upon foci of syphilis somewhere in the body. Analysis of his experiments in the light of experimental results in the rabbit indicates rather that in syphilis an immunity may develop which is not dependent upon the persistence of foci of infection, and this is in harmony with clinical experience of reinfections in man. This phase of the problem is still open to solution. Yet there is evidence that during the course of a syphilitic infection the host acquires some resistance against a second infection with the same species of parasite, which may persist after the first infection has been reduced by treatment to the level where it cannot be detected. Reinoculation tests in animals and reinfections in man have, therefore, no real

[1] Medicine: Analytical Reviews of General Medicine, Neurology and Pediatrics, vol. v., No. 4. Obtainable in Great Britain from Messrs. Baillière, Tindall and Cox, 7, Henrietta-street, London.

bearing upon the question of persistence or absence of infection—i.e., of cure or failure to cure—and are useful only as indicators of specific resistance. All workers, employing no matter what antigen, have failed to produce active immunity to syphilis in man, monkeys, or rabbits. Nor has it proved possible to alter the course of an existing syphilitic infection by immunisation with any product derived from cultures of spirochæte or from syphilitic tissue. There is no convincing evidence that the offspring of syphilitic parents are immune to syphilis and at the same time free of syphilitic infection. There is no hope, therefore, that the human race may build up a heightened resistance to the disease. Neisser observed that in lands where syphilis has prevailed for generations its course is not appreciably different from that in countries where it is not so prevalent. The records of the development of antibodies in syphilitic patients are conflicting. Indeed, it is far from clear that these so-called antibodies have anything to do with recovery from syphilis or with acquired or natural resistance to the disease. Certain antibodies can be produced in the rabbit; they give but little protection, however, for the very animal possessing them in its serum is found to be susceptible to infection with potent virus. F. Jahnel and J. Lange (1925) inoculated four paretics with a yaws virus which was evidently virulent for it produced yaws lesions in a normal person. In none of the paretics did a lesion develop. There is some epidemiological evidence for the view that in man yaws protects against syphilis, although the simultaneous existence of both infections in the same person has been reported. Recent work with rabbits suggests a close biological relationship between the two. If it be true that yaws can protect a man against syphilis the tropics may yet produce a new Jenner who will find a way of protecting man against syphilis by systematic inoculation with yaws virus. Venereal spirochætosis of rabbits deserves attention because of the possibility of confusing it with experimental syphilis in the rabbit. It is indigenous to rabbits, manifesting itself as a chronic dermatitis of genitalia and anus. It is transmissible from rabbit to rabbit by sexual intercourse, whereas syphilis in rabbits is not so transmissible. Its causative agent, the *Spirochæta cuniculi*, is morphologically indistinguishable from *S. pallida*. There is no evidence of immunological relationship between the two. Rabbits infected with either are suceptible to infection with the other. It is certain that the tissues of the syphilitic acquire the capacity to react to new syphilitic virus introduced from without, and also to the syphilitic's own virus, in a manner different from that displayed by the normal individual. It may be manifested as apparent indifference (anergy) or by super-susceptibility (allergy). Both may be functions of the defensive process. Spontaneous sterilising immunity in syphilis must be rare; man, as a rule, is incapable of eliminating syphilis from his body unaided, though he does react against it and limit its extent. That this reaction is incomplete may be due in part to an immunisation of the invading organism against the host, a mutual adjustment between the two being arrived at whereby a state of ideal parasitism is nearly reached; or else it may be due to some similarity between the metabolic activities of the spirochætes and the host's cells.

WE are glad to announce that the slight improvement in Sir Ernest Hodder-Williams's condition is being maintained.

THE death occurred at Cheltenham on Jan. 14th of Dr. Thomas Claye Shaw, formerly medical superintendent of the London County Asylum at Banstead and a pioneer in mental welfare. He was 81 years of age.

THE Home Secretary has appointed Dr. John Crosthwaite Bridge, one of the Medical Inspectors of the Factory Department, to the post of Senior Medical Inspector of Factories which was vacated by the resignation of Sir Thomas Legge.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CCVII.—TUBERCULOSIS OF THE HIP-JOINT IN CHILDREN.

A SUCCESSFUL result in cases of tuberculosis of the hip depends so largely on early treatment, constitutional as well as local, that the recognition of the disease in an early stage is of great importance. In young children it is almost always the limp which gives rise to suspicion, although in older children and adults pain in the knee or hip on sudden forced movements of the joint may be an equally early symptom. A constant accompaniment is some limitation of movement, due to reflex muscular spasm; when the sound hip and knee are flexed until the lumbar lordosis is obliterated, it will be found that the child cannot lay his other leg flat on the table, and further, that gentle attempts at rotation and abduction to the degree obtainable with the sound limb lead to movement of the pelvis. Limitation of movement in every direction indicates arthritis but this is not necessarily tuberculous, and other conditions have to be excluded. A transient toxic arthritis, secondary to tonsillar or intestinal infection, is not infrequent, but this clears up completely after a short rest in bed. Gonococcal arthritis and monarticular rheumatism are uncommon in the hip-joint. Acute osteomyelitis of the upper end of the femur is characterised by severe toxic symptoms and cocci are found in any pus obtained by aspiration; X ray and clinical examination distinguishes pseudocoxalgia, traumatic coxa vara, osteo-arthritis, tumours, fibrocystic disease, and disease of the fifth lumbar vertebra or sacro-iliac joint, all conditions which may give rise to symptoms suggesting tuberculosis of the hip-joint. Apart from these, almost all suspected cases prove to be tuberculous, and the only way to guard against an error which may have serious consequences is to adopt the principle that children in whom pain or limitation of movement persists in spite of rest in bed for a few weeks should receive the treatment advocated for a tuberculous joint unless X ray examination reveals the presence of another disease. A negative skiagram does not prove the absence of tuberculosis in an early stage. A negative von Pirquet test, should it be obtained, is, on the other hand, useful evidence that the condition is not tuberculous.

A diagnosis of early tuberculosis of the hip having been made, the transfer of the patient to suitable surroundings should be regarded as most urgent. It is generally accepted that the disease usually begins in the red marrow of the head and neck of the femur and the acetabulum, and that early reflex spasm of the hip muscles may be due to sympathetic inflammation of the joint before this has itself become actually infected with tubercle. This is the time, while the disease is still limited to the interior of the bone, to apply constitutional treatment intensively—change of air and environment, continuous life in the open air with exposure to sunshine or artificial light, good food, and cod-liver oil—combined with effective traction. London, at any rate, is well supplied with institutions at which such treatment is available, and there is no need for delay, for if application is made by telephone to the London County Council any case of hip tuberculosis will be transferred by ambulance to one of the country orthopædic hospitals of the Metropolitan Asylums Board forthwith. At a few institutions, such as the Shropshire Orthopædic Hospital, Oswestry, rooms are reserved for paying patients. For children of the middle and upper classes treatment combined with suitable educational facilities can now be obtained at the Morland Clinics at Alton, Hampshire, where during the summer months the amount of sunshine available for treatment is high, and the mildness of the climate makes outdoor

life possible during the greater part of the year without discomfort to the patients.

There has been a tendency in recent years to attribute the benefits of heliotherapy mostly to the light. It is probable that this is an incorrect assumption, and that the marked influence on metabolism of exposure of limited parts of the body to movements of air and to changes of temperature is of even greater importance. In this land of limited sunshine, experience shows that, provided the cases come under adequate treatment at an early stage, results unsurpassed in any country can be obtained by an open-air life reinforced during the winter months by artificial light in graduated doses. To obtain the best effect outdoor life should be continuous; the appetite and weight show immediate improvement, anæmia speedily disappears, while respiratory troubles and spread of infectious disease are almost unknown. In winter the child should have a small blanket next him, with hot-water bottles or loose blanket-bags for the feet and woollen gloves or mittens for the hands. With ordinary care it is only occasionally that the sunshine in this country will cause troublesome sunburn, and when it does occur it does not appear to cause ill effect apart from the local discomfort. At the slightest sign of it the patient should be covered and the reddened skin treated with calamine lotion. It is unnecessary here, therefore, to follow the elaborate system of carefully graduated exposures required in Switzerland; nevertheless, it is advisable that at the commencement of the treatment exposures should be gradual both as to the extent of surface and the period, particularly with children newly received from towns. In hot weather the patient should be placed in the shade during the heat of the day; the head should be protected by hat or sunshade, and the eyes should be directed away from the sun and, if necessary, tinted glasses should be worn.

Methods of Immobilisation and Extension.

Immobilisation in the active stage is now universal. Ambulatory treatment is bad, not only because it encourages growth in the sound limb in excess of the affected one, but on account of the difficulty of fixing the joint and preventing deformity. As is evident from X ray examination, decalcification of the affected bones occurs early, and for this reason imperfect fixation, leading to reflex spasm and pressure on the softened bones, is most harmful. Even absolute fixation, however, does not remove a tonic contraction of these muscles, and thus traction in some form or other is needed. Weight-can extension may be used, but traction by suspension will generally be found more effective. In its simplest form the mattress, resting for its whole length on a fracture-board, is raised at one end to the level of the top rail of the bedstead head, and the cord of a strapping extension, applied to the thigh of the affected limb, is tied to the rail. The weight extending the joint is thus the patient's body, and it is remarkable how in a single night an acutely tender and markedly malposed joint will painlesly fall into good position. Slight flexion of the knee is secured by the insertion of a wooden bar under the mattress, and external rotation is prevented by a sandal, to the sole of which a piece of wire, bent to the shape of an inverted T, is screwed. This method of treatment is suitable when the patient shows an average amount of constitutional resistance, the disease is comparatively recent, and general thickening is absent or inconsiderable, even though there may be localised abscess formation. When, on the other hand, there is found on admission marked general thickening around the joint with considerable pain and tenderness, and the patient appears to have little power of resisting the disease and to be definitely ill with it, or if septic sinuses are already present, it is hopeless to expect a usefully movable joint, and a Jones's abduction frame is probably the most generally convenient splint. Whichever of these two methods is indicated at first, the time will arrive when the joint may without detriment have, in the one case less effective traction, in the other less complete fixation. It is then my practice to use a gas-tube frame with a weight extension, the whole being mounted on a "Carshalton" carriage,[1] which allows the patient to share in the social amenities of the hospital.

When the disease is quiescent, as shown by the fact that even slight tonic contraction has been completely absent for months, the weight extension, which has been gradually reduced, may be discarded, and the movements which the patient usually tries to make at this stage may be encouraged under careful supervision; no attempt at passive movement, however, should be permitted. The longer this stage is prolonged, the greater is the mobility likely to be, but the position of the limb should be carefully observed and the progress of healing checked by X ray examination. When the patient gets up he should wear a short celluloid or leather spica or similar splint and walk on patten and crutches. When he is in bed the spica need not be worn and he should be allowed to move the joint if any movement is possible. Especially when the joint is fixed is it important that he should be seen at frequent intervals after the spica has been discarded, lest flexion deformity occur.

Secondary Deformities.

Secondary deformities of other parts of the body are not uncommon—flat-foot, genu recurvatum, genu valgum and scoliosis. Flat-foot, which results from contracture of the tendo Achillis, can be prevented by putting the ankles through a full range of movement each day. The genu recurvatum, which is really to a great extent a bend in the upper part of the tibia, can be avoided if the knees are kept a little flexed. Genu valgum is sometimes secondary to adduction of the thigh, but not infrequently is the result of traction not having been made in the line of the femur. Scoliosis is encouraged if care is not taken to keep the interspinous line at right angles to the long axis of the trunk. It is likely to occur in a severe form, especially in female adolescents, if the hip is ankylosed in a position of adduction with insufficient flexion. The best position for ankylosis is moderate flexion; if, with the patient recumbent, the lumbar hollow is obliterated when the limbs are raised 35 degrees, comfortable sitting and standing are both possible. If the angle is less, there is an increased tendency to scoliosis; if greater, the patient has to compensate either by excessive lordosis or by bending the knee of the affected limb, which increases the shortening.

Adduction persisting to the stage of convalescence requires correction by operation. If the joint is not fixed, treatment by tenotomy of the adductors, followed by fixation for several months in plaster, is often sufficient. If there is fibrous ankylosis with only moderate deformity Brachett's osteotomy is useful, but when the adduction is marked the deformity is apt to recur owing to instability of the ankylosis. In marked adduction, therefore, Lorenz's bifurcation osteotomy is advisable.

Abscesses are treated by immobilisation and aspiration; if these fail and the abscess threatens to come to the surface, the thinned area of skin may be excised, the thick tuberculous material in the cavity expressed, and the wound sutured; the bone should never be scraped. Some surgeons prefer merely to puncture the pointing abscess with a tenotomy knife. Septic tracts should be slit up and allowed to granulate; sequestra if present should be removed; later, the small sinus leading to the joint should be excised, treated with bipp, and sewn up. In adults operative measures in the active stage are frequently adopted with a view to obtaining bony ankylosis or pseudarthrosis.

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[1] THE LANCET, 1921, i., 1071.

Special Articles.

BISMUTH IN THE TREATMENT OF SYPHILIS.

BY THOMAS ANWYL-DAVIES, M.B., B.S. LOND., M.R.C.S. ENG.

(From the Venereal Diseases Department, St. Thomas's Hospital, London.)

(Concluded from p. 152.)

Intolerance to Bismuth.

IN general the symptoms of bismuth poisoning are similar to those of mercurial poisoning, but the patient recovers sooner from the toxic effects of bismuth. The following brief observations on the subject of bismuth toxicology may be of practical interest. *Loss of appetite*, accompanied perhaps by vague feelings of indigestion and headache, is the earliest symptom of bismuth poisoning. *Loss of weight* is another early sign, and rapid loss of weight of 2 to 4 lb. in a few days suggests commencing intolerance. *Sleeplessness and depression* are signs of intolerance which may easily be overlooked. They are generally accompanied or followed by albuminuria, and indicate suspension of the treatment. A *blue line on the gums* is a most valuable sign to the practitioner as it is a guide to the amount of bismuth that can be tolerated, and consequently to the dosage. At first a grey line forms round the edge of the gums and this gradually turns to a greyish-blue colour. Even when the line becomes definitely blue, provided that stomatitis is absent, the administration of bismuth need not be stopped, but the dosage should be reduced. In this way bismuth may be continued for many weeks without ill-effect. On the first sign of stomatitis, however, the injections of bismuth should be stopped, as the action of the drug is cumulative. Colonel Harrison [49] has observed that the blue bismuth line on the gums is of more frequent occurrence when using the soluble compounds. The bismuth blue line, however, though a useful warning of intolerance, and generally present in the average patient, may be absent in severe bismuth poisoning. The following cases illustrate this important point.

Peripheral Neuritis and Albuminuria.—Critchley [50] quotes a case of peripheral polyneuritis in a woman of 38 who had kidney disease. Five weeks after the first injection of bismuth she had severe pains and exquisite tenderness of the muscles, with loss of strength in all four limbs. Diarrhœa and vomiting and the blue line on the gums were absent.

The case emphasises the fact that bismuth injections should not be administered when the kidneys are damaged, and that examination of the urine for albuminuria should precede every injection.

Bismuth Dermatitis.—On one occasion I saw a severe case of exfoliative dermatitis at St. Thomas's Hospital venereal department, which was indistinguishable clinically from the well-known arsenical dermatitis, and was due to bismuth alone. The patient was a well-nourished tabetic subject who showed no sign of a blue line on the gums.

Vincent's Angina.—I have had four patients under my care in whom Vincent's angina has developed during the administration of a course of bismuth. Stomatitis and the blue line on the gums were not present, and there were no other signs or symptoms of bismuth intolerance, but the Vincent's angina would not respond to the usual methods of treatment until the injections of bismuth were suspended. Patients receiving bismuth are more prone to Vincent's angina than usual, which is possibly due to the lowered resistance of the mucous membrane caused by the bismuth excretion in the saliva.

Effect on the Kidneys.—Clinical experience of the effect of bismuth on the kidneys bears out the conclusions which Brown, Saleeby, and Schamberg [51] obtained experimentally on rabbits that bismuth is a drug of relatively low toxicity. They found that 30 mg. per kg. of insoluble potassium bismuth tartrate in oil (nine times the therapeutic dose in man) could be injected without producing an alteration in the blood chemistry indicative of nephritis or any histological evidence of kidney damage. It is on account of this latitude between the therapeutic and the toxic dose that patients rapidly lose any albuminuria when the administration of bismuth is stopped. The toxicity for the kidneys seems to correspond with the rate at which the metal is absorbed into the system.

Acetyloxyaminophenyl Arsenate of Bismuth.

At the beginning of 1926 Levaditi [52] described a new compound of arsenic and bismuth which had been on trial since 1924—namely, the basic acetyloxyaminophenyl arsenate of bismuth, which contains 40·2 per cent. of bismuth and 14·5 per cent. of arsenic, and is insoluble in water. Suspended in saline it cured experimental syphilis with a dose of 1·5 mg. of bismuth per kg. of body-weight. In an oily suspension the curative dose was 0·041 mg. per kg. Fournier and Schwartz [53] confirmed these results in the treatment of human syphilis in 20 cases. They reported the absence of painful reactions, disappearance of *S. pallida* in 24 to 48 hours after the first injection of 2 c.cm., rapid cicatrisation of the chancres, and a negative Wassermann reaction in each case after a single series of 12 injections.

This drug, bistovol, was tested in the St. Thomas's Hospital venereal department, but the above claims were not confirmed. It proved very painful, and active spirochætes were found as long as six and seven days after the initial dose. When it was found that *S. pallida* were present seven days after a single dose of 0·3 g. and the negative Wassermann reaction had become strongly positive (++) during the same time, stronger doses were injected at shorter intervals. In two cases 0·6 g. was injected in three days, but the spirochætes were found alive five days after the initial dose, and the Wassermann reaction was positive (++). In two other cases 0·75 and 0·9 were given, but the spirochætes were active on the fourth and fifth days respectively.

The Place of Bismuth in the Treatment of Syphilis.

It is impossible to judge at present the position that bismuth will ultimately occupy in the treatment of syphilis. Under its action *S. pallida* disappears rather slowly from the lesion when compared with the rapid effect of arsenobenzol, and experience shows that bismuth and its compounds have not such a powerful spirochæticidal action as arsenobenzol, which can hardly be replaced by bismuth or its compounds in treating cases of early syphilitic infection. There seems at present to be some danger of practitioners allowing bismuth to thrust arsenobenzol into the background. Such a substitution is not warranted by the evidence. Bismuth does not render the patient non-infective so quickly as does arsenobenzol, and its use to the exclusion of arsenobenzol in early cases is likely to be followed by an increase in the prevalence of syphilis, since a greater proportion of cases of syphilis in an early and communicable stage will transmit their disease to others. Some at least of the great reduction of cases of syphilis seen for the first time at the treatment centres in England and Wales, from 42,000 in 1920 to 22,000 in 1925, is attributable to the rapidity of action of arsenobenzol, and it would be a great pity if this advantage were to be lost in a wave of enthusiasm for a comparatively new remedy. This warning is supported by the fact that in France, where bismuth is more popular and more extensively used than elsewhere, there has been a definite increase in the number of syphilitic cases since 1923, particularly in the large centres such as Paris. Prof. Josef Jadassohn,[54] speaking at Berlin in November, 1926, on the decline of syphilis in Europe, had collected statistics showing that in both England and France, between 1919 and 1923, there was a decrease of 50 per cent. in the number of syphilitic cases, no doubt due to the use of salvarsan. During the past four years, however, there had been a recrudescence of syphilis in France, where bismuth was first introduced as an antisyphilitic remedy. This

was also observed by Dr. E. Jeanselme,[55] of the Hôpital St. Louis, who found that there was an increase of 20 per cent. in the number of cases recently infected with syphilis in Paris, the figures having risen from 1955 in 1924 to 2445 in 1925. As the author stated, this may be due in part to the enormous immigration of foreign workmen into the large manufacturing centres in that country, but the chief reason advanced by Jeanselme is the indiscriminate substitution of bismuth compounds for salvarsan. The view is held by many French doctors that bismuth is more active therapeutically than arsenobenzol.

If not a substitute for arsenic, can bismuth replace mercury? This is a difficult question which it is impossible to answer conclusively, considering our present knowledge. The experimental evidence obtained by the action of bismuth on syphilis in the rabbit is in favour of that drug, but the clinical results and the pathological findings in man have not been so successful. Raiziss and Severac [56] consider that bismuth compounds are powerful enough to cause complete eradication of infection in experimental syphilis in the rabbit, but that salvarsan has a higher chemotherapeutic index than bismuth, although this is distinctly superior to mercury. Workers disagree concerning the effect of bismuth on the Wassermann reaction. It does not seem to have any marked effect in changing a positive to a negative result in the serum of cases of late syphilis or in Wassermann-fast subjects, but there is general agreement that clinically the tertiary lesions, especially those in the mouth, and the symptoms of neurosyphilis, excluding general paralysis, respond rather well to the administration of bismuth. On the other hand, certain observers have reported that poor results occur in some cases, there being apparently little or no therapeutic effect. The more favourable result of the Wassermann test in the series of mercury-treated cases when compared with those treated with bismuth suggests that mercury is more active therapeutically than bismuth, since as our knowledge stands at present the blood test results are the best criterion of the effect of treatment.

Indications for Preference of Bismuth to Mercury.

There are certain times when bismuth is the remedy of choice. It is not so toxic, and can be more easily tolerated than mercury in nephritic cases. In cases of jaundice due to arsenical poisoning, bismuth can be given without causing the patient any inconvenience, while mercury, owing to its greater toxicity, is not so satisfactory. In advanced organic disease bismuth is often tolerated when arsenic and mercury would be inadvisable. Occasionally, in cases of late syphilis which have been inadequately treated with mercury in which the spirochætes have possibly become mercury-resistant, good results often follow a change to bismuth.

There is only one practical contraindication to bismuth and that is stomatitis, which can be prevented with suitable care. If disinfection of the mouth and aperients fail to remove it, injections of sodium thiosulphate, 0·45 to 0·9 g., should be given daily. This does not seem to be so effective intravenously as when given by the deep subcutaneous route. Sodium thiosulphate causes no reaction, and any pyrexia after its use is not due to the drug itself.

The therapeutic and toxic actions of mercury are always proportional to the amount of metallic mercury present. The ratio of the curative to the toxic dose is high. At the moment all efforts to increase the margin between the therapeutic and the toxic dose of mercurial preparations have failed, and more often than in the case of bismuth the syphilologist may be baulked of his result by the patient's intolerance of the remedy.

There are, however, arguments in favour of alternate courses of mercury and bismuth. Prof. E. Glynn, Dr. R. E. Roberts, and Dr. Phoebe M. Bigland [57] (Medical Research Council Report, No. 107, November, 1926, on the effect of treatment on the Wassermann reaction) express the conviction that a serological relapse of the patient, the Wassermann reaction becoming again positive, indicates renewed activity of *S. pallida*. They state that strains of *S. pallida* resistant to mercury may be produced by the prolonged and insufficient administration of this drug. They consider that mercury attacks the spirochætes when circulating in the blood, but is unable to reach the inaccessible residual spirochætes which, in the later stages of syphilis, become protected in fibrotic lesions, indurated lymph glands, testis, and spleen. If the views of these writers are correct, they indicate the advisability of varying the remedy, giving in one course mercury, in another bismuth, and so on, a plan which seems to be favoured by a number of American syphilologists.

Probably bismuth, like mercury, is capable of producing bismuth-resistant spirochætes, particularly if the dosage given is insufficient to destroy them. Giemsa [58] found that spirochætes transferred from one rabbit to another developed resistance to inadequate doses of sodium tribismuthyl tartrate. Glynn, Roberts, and Bigland [57] recommend the use of salvarsan for the prevention of Wassermann relapses and the destruction of residual spirochætes, as they consider that arsenobenzol does not produce spirochætes resistant to this drug. I am sceptical of this, and am inclined to think that arsenobenzol, mercury, and bismuth compounds may each produce resistant spirochætes, especially when prolonged hypotherapeutic doses are administered. In support of this view Klauder [59] reported that he had produced arsenic-resistant strains of *S. pallida* in rabbits by giving them small subcurative doses of arsenobenzol, and inoculating the strain through several animals.

Stokes,[60] of Philadelphia, considers that half the mercury in all courses of treatment can be replaced by bismuth with advantage, and recommends alternate courses with mercury. He prefers to begin with a soluble mercurial salt, however, in cases of early neurosyphilis, because of its quicker direct action on *S. pallida* instead of the possibly only inhibitory action of bismuth. Dennie [61] believes that recurrent syphilis should be treated by salvarsan with mercury administered to the limit of tolerance and alternated by courses of bismuth.

All these are arguments for the administration of arsenobenzol at the same time as mercury or bismuth in preference to the separate use of these drugs. Mercury and bismuth, however, should not be exhibited together as they are eliminated by the same routes, and their toxic effects are similar and additive.

I would like to sound a note of warning against the indiscriminate use of the bismuth compounds if the best therapeutic results are to be obtained. Sufficient time has not elapsed for us to decide whether bismuth or mercury is more effective, but the results after four years of bismuth therapy do not warrant the wholesale adoption of bismuth to the extinction of mercury. In spite of the fact that bismuth has been enthusiastically adopted, thoughtful workers will question the advisability of discarding mercury at this stage of our knowledge, for the ascendancy of bismuth over mercury in the cure of syphilis has not been established, although the easy convenience of the painless administration of an insoluble bismuth compound is an important factor in dealing with frail humanity.

In general the results of workers in this country have not confirmed the findings of Levaditi and his coworkers in France, and although bismuth is convenient to administer, it seems doubtful if it will succeed in replacing mercury entirely in the chemotherapy of syphilis.

Conclusions.

1. Bismuth and its compounds have a definite use in the treatment of syphilis. 2. The soluble compounds are painful and more toxic than the insoluble drugs, which are painless. 3. Metallic bismuth is the least toxic of these preparations. 4. The most satisfactory method of administration is by the deep subcutaneous route. 5. Severe bismuth poisoning may occur in spite of the absence of the blue line on the gums.

6. Bismuth is capable of eliciting the Jarisch-Herxheimer reaction. 7. Tertiary lesions of the mouth and tongue, and the symptoms of tabes, respond particularly well to bismuth therapy. 8. Bismuth may not be so powerful as mercury, but it is more convenient to use. 9. Bismuth and arsenobenzol have not such a strong effect on the Wassermann reaction as arsenobenzol and mercury. 10. Bismuth is valuable in cases of nephritis, jaundice, and advanced organic disease, where mercury and arsenic may not be suitable, and in late syphilitic cases which have become resistant to arsenic and mercury. 11. The evidence is in favour of bismuth, arsenic, and mercury, being all capable of producing resistant spirochætes when administered in subtherapeutic doses. 12. Bismuth is not an efficient substitute for arsenobenzol. 13. Recent experiments by Kolle and Evers suggest that bismuth may have an *inhibitory* action rather than a curative effect, and at present our knowledge does not warrant the wholesale adoption of bismuth instead of mercury. 14. It is not established that bismuth is more effective than mercury in the permanent cure of syphilis, and it may be found that the curative value of mercury is higher than that of bismuth.

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(*Continued at foot of next column.*)

THE INCIDENCE OF CANCER IN MONASTIC COMMUNITIES.

THE incidence of cancer upon members of certain religious orders has been the subject of an elaborate statistical investigation[1] undertaken by Dr. S. Monckton Copeman, F.R.S., and Prof. Major Greenwood, under the auspices of the Departmental Committee on Cancer of the Ministry of Health. Sir George Newman remarks in a prefatory note that though the results of the inquiry are negative, they are well worth publishing, not only for their scientific value, but as an indication of the kind of proofs that have to be sought before the various popular dietetic theories of cancer can be accepted.

The authors of the monograph point out that, of the many thousands of pages devoted to speculations on the ætiology of cancer, a by no means negligible proportion are devoted to the indictment of general or particular dietetic habits. Certain English medical men, whose names deservedly carry great weight in different departments of medicine and surgery, have suggested that rich, abundant food, particularly meat, contributes to the production of cancer; that intestinal stasis conditioned by the diet of civilised mankind is the most important ætiological factor of malignant disease; and that the increased use of preservatives in the food industries has a bearing upon the increase of mortality from cancer.

Correlation and Causal Relation.

The objection in principle to most of the arguments on these lines used by various writers is, they contend, that a correlation in time or place between cancer mortality and some other variable is tacitly interpreted as being equivalent to a causal relation, provided such an assumption is not patently absurd. Nobody, of course, argues that the increase during the last quarter of a century of the Socialist Party has been an ætiological factor of increasing mortality from cancer, because no rational person can imagine any direct relation of cause and effect between the two variables. But if we were to substitute for Socialist Party, consumption of meat, of margarine, or of tinned foods, many intelligent people would accept the argument as valid, because they can imagine ways in which increased consumption of animal protein, of vitamin-poor fat, or of antiseptics *might* prejudice normal cellular metabolism. The *statistical* argument in one case is precisely as good as in the other, carrying us no further than the proposition that the statistics are compatible with the truth of the assertion that the growth of the Socialist Party, of the consumption of meat, of margarine, or of American canned goods, *may* be a factor of increasing cancer mortality. An English writer who seriously

[1] Ministry of Health Reports on Public Health and Medical Subjects. No. 36: Diet and Cancer. London: H.M. Stationery Office. 1926. Pp. 33. 9*d*.

BISMUTH IN SYPHILIS.

(*References: Continued from previous column.*)

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attempted to meet these criticisms was the late Rollo Russell, who argued that if the constituents of a diet be really an ætiological factor, then we should try to study the cancer mortality of persons living under conditions which, *except* in respect of diet, are comparable with those experienced by populations wherein cancer is a large and measurable factor of mortality. In his work, published in 1912, Russell gave statistics of seven Cistercian and Benedictine Monasteries, in which the total number of the votaries extending over a period of about 26 years was 420; during this time only one death from cancer was recorded, this being attributed by him to the exceptional habitual use of a strong irritant (pepper).

These observations of Russell were the starting-point of the present inquiry. The dietetic habits of the Carthusians, Benedictines, Cistercians, Carmelites, and Dominicans were studied, the two last named not being enclosed orders, and both English and Belgian data were analysed. The next step was to attempt to obtain an accurate record of the ages and lengths of time under observation of the persons whose risk of dying of cancer it was sought to measure, together with the certified causes of death of those who died.

The Ecclesiastical authorities of five religious houses in England, and one in Belgium, and the staff of the General Register Office furnished particulars from which life tables could be compiled, the standard of expected death being taken from the tables of the British Official Life Annuity Experience (1893).

Inferences Drawn.

These tables are set out in the report, the data are analysed, and a few inferences drawn. A *certain* inference is that no statements as to causes of death, even when made in absolute good faith, by persons long resident in the communities should be accepted without verification. Thus among the English Carthusians and Cistercians (males) visited by one of the authors, *one* death only was known by the authorities to have been due to cancer. Investigation of the death registers raised the number of definitely certified deaths from cancer to *seven* and disclosed four others which might have been due to cancer.

What reliance can be placed on hearsay statements respecting mortality from cancer amongst, say, aborigines, the reader may judge in the light of this investigation of well-kept records. An equally certain inference is that, upon the evidence, we cannot say that a prima-facie case has been made out in favour of the proposition that any of the Orders are less liable to cancer than their lay contemporaries in the world.

A study of the general statistics of Cistercian communities throughout the world confirmed the conclusion reached that cancer does occur as a fatal disease in Cistercian Houses everywhere, whether the real incidence is high or low cannot be learned. The necessary data do not exist.

Incidence of Fatal Cancer upon Inmates of Prisons and Mental Hospitals.

The low rates of mortality from cancer recorded in prisons and mental hospitals has been the subject of comment, and the authors append some critical observations on this point. The inmates of prisons and mental hospitals have only one point of resemblance to members of religious orders—viz., that they reside in institutions and receive a diet less varied and less rich in proteins and fats of animal origin than the general population. The most valuable analysis of prison data is to be found in a monograph on the English Convict, by the late Charles Goring, who came to the conclusion that cancer was less prevalent amongst convicts than in the general male population. The authors of this investigation, after studying Goring's figures, agree with him that the fatal incidence of cancer on convicts appears to be lower than on the general population of like age; but, as it was impossible to examine the death certificates or to determine the precise exposure to risk (as they had been able to do for the religious orders), and as they found in the latter case that first impressions were not confirmed by a closer examination, they do not feel entitled to draw any stronger conclusion from the evidence available than a verdict of not proven. An analysis of the data accumulated in the 19 years which have elapsed since the end of the period covered by Goring will be carried out when occasion permits.

As to mental hospitals, attention has been directed officially more than once (e.g., in the Sixty-fifth Annual Report of Commissioners in Lunacy, p. 26, and Tenth Annual Report of the Board of Control, p. 34) to the fact that the proportional mortality from cancer in the mental hospital population is much less than in the general population.

After making various allowances, the authors conclude that there is no important difference between the rate of cancer mortality upon inmates of mental hospitals and that upon the general population. But the fact that, *relatively to other causes of death*, cancer is less frequent in mental hospitals than outside them, has led some to suggest that there may be special factors militating against the prevalence of cancer. One such factor is the huge force of mortality exerted by causes either peculiar to the insane, such as general paralysis, or notoriously frequent amongst them, such as tuberculosis. But it may still be urged that since, judged by mortality-rates from diseases *not* peculiar to the insane, the inmates are "bad" lives, there is at least a relative immunity to cancer which needs explanation. This argument, however, rests on the tacit assumption that the fatal incidence of cancer varies with the general resistance of the body. This is a plausible assumption, but it is not easy to justify. The analyses made for the Cancer Commission of the League of Nations, dealing with the incidence of different forms of cancer upon women (Data of England and Wales, 1911–20), led to the conclusion that those subdivisions of the country with high (or low) rates of mortality from cancer of the uterus or breast did not, on the average, have high (or low) rates of mortality from other diseases. This argument is, of course, not conclusive, and, while drawing no inference, the authors consider it proper to call attention to the fact that two types of institutional population, convicts and the insane, while differing widely in respect of general mortality—the former having a rate somewhat superior to and the latter enormously worse than the general rate—do have this in common, that *both* show either an absolutely or relatively low rate of mortality from malignant disease.

Conclusion.

The analysis of the data supplied by monastic communities conclusively proves that fatal cancer occurs in populations abstaining from flesh food, and lends no real support to the contention that among such populations the relative incidence of cancer is low.

A tribute is paid by the authors to Cardinal Bourne, Monsignor Jackman, and to the many conventual Superiors who have made the analysis possible, often at the cost of very considerable labour in searching records and entering particulars upon cards. Although, in a sense, the results are inconclusive, the labour has not been in vain. A perusal of this report will convince most impartial persons that no scientific value whatever attaches to assertions, supported merely by the vague pseudo-statistical evidence which is customarily cited, respecting the rôles of certain articles of common consumption in the genesis of cancer. There is a too general impression that it is the duty of scientific men, particularly those in the public service, to try out any and every suggestion of this kind. As the present report abundantly proves, the trying out of any such suggestion is a most laborious business, not merely for the investigator, but for the persons called upon to supply information.

WELSH NATIONAL SCHOOL OF MEDICINE.

THE QUESTION OF A CHARTER.

ON Jan. 14th a special meeting of the Court of the University of Wales was summoned at Shrewsbury, for the express purpose of receiving and confirming a draft Charter incorporating the Welsh National School of Medicine as an independent school of the University. This Charter had been prepared by the University Council in accordance with a decision reached at a previous meeting of the Court held in October, 1925. The adoption of the draft Charter was proposed by Mr. W. N. Bruce and seconded by Alderman William George. However, an amendment by Mr. A. H. Trow, B.Sc., Principal of the University College of South Wales and Monmouthshire, in favour of the reference of the proposals back to the University Council for further consideration and conference with the College was carried by 53 votes to 48. The amendment was supported by the opinion of Counsel, Mr. Alexander Grant, K.C., whose views on certain legal points appear to have had considerable influence on the voting. In answer to various questions put to him by the University College of South Wales and Monmouthshire, he gave the opinion that the scheme suggested by the University Council was beyond the powers of the University as conferred by its present Charter or by the suggested altered Charter, that the proposed scheme was a grave infringement of the rights of the College to which the school had hitherto been attached, and that an Act of Parliament would be required if property now vested in the University College of South Wales and Monmouthshire were to be transferred to the new school. Dr. Rocyn-Jones, seconding the amendment, suggested that the adoption of the Council's proposals would hasten the day when the Federal University of Wales would become extinct through the constituent Colleges attaining University rank. Before the voting was taken a letter was read by Lord Kenyon, Pro-Chancellor of the University, from the Privy Council in which the early lodgement of the draft Charter and the petition was pressed for, since the consideration of the documents would inevitably take a long time. This letter contained no suggestion that the scheme for incorporating the school as an independent school of the University was not legally possible, but the Court did not appear to be convinced by this letter nor by the Pro-Chancellor's statement that the University Council had taken the advice of their own Counsel, Mr. Tyldesley Jones, as to the changes in the University Charter necessary to enable the scheme to be carried out, and that these were embodied in the papers before the Court. The General Medical Council have made it clear that they favour the establishment of a complete national medical school by giving notice of their intention to oppose any Charter which does not provide for the inclusion of anatomy and physiology.

In view of the abortive result of many previous attempts to reach agreement between the Councils of the University and of the College, it is difficult to foresee a happier result from their resumption. It is certainly unfortunate that a further six months' delay in taking even the first step towards establishing the status of this school seems inevitable, for its unsettled position must be prejudicial to its welfare.

BLACKBURN ROYAL INFIRMARY.—Blackburn War Memorial is to take the form of a new wing to the Royal Infirmary, to be put up at an estimated cost of £80,000. Of this sum £20,000 is still required.

EXTENSION OF STOCKPORT INFIRMARY.—A new orthopædic department of the Stockport Infirmary was opened by Lady Sheffield on Jan. 13th. The building has been built and equipped at a cost of £9000 and provides massage, electrical, and artificial sunlight treatment. There is also a gymnasium for Swedish remedial exercises.

MEDICINE AND THE LAW.

Spinner's Cancer on the Face.

ON Jan. 13th at the Oldham County Court Judge Spencer Hogg had before him the first claim by a mule-spinner for compensation for cancer of the face. The case was taken under the industrial disease section, and compensation at the rate of £1 8*s.* 8*d.* per week was claimed. The plaintiff said that he had been a spinner for 20 years and had worked at the defendants' mills for 11 years. At the beginning of 1925 he had noticed a small wart about an inch from his left eye. At the time he had thought little of it but the wart had grown larger, and when he went to see his doctor he was sent to the infirmary. After an operation, performed in July last, the certifying surgeon had given a certificate stating that the plaintiff was suffering from epitheliomatous ulceration caused by mineral oil. Dr. A. C. Sturrock said that the case was one of epithelioma of the face, and might have been caused by small quantities of mineral oil being rubbed into the skin over a long period. He had seen only one previous case of cancer of the face in a spinner, but had seen the condition in people who were not spinners. For the defence Dr. Thomas Watts, certifying factory surgeon for the Ashton and Hyde District, said he had never come across such a case in a spinner, and had had none reported to him. After other evidence had been heard it was contended for the defence that the disease could have arisen from some other cause and even naturally. The Judge said that his duty was very limited owing to the wording of the certificate which had been accepted. Any common-sense man, having regard to the daily life of the spinner and the chances of contact with oil, would realise that it was obvious that the man had got the disease through contact with mineral oil over a large number of years. He gave an award for the amount claimed, the payment to date from December, 1925.

Unusual Claim for Compensation.

Judge Leigh, sitting at Manchester County Court, on Jan. 10th awarded £300 and costs to the widow of a solicitor's clerk who, admittedly suffering from weakness of the heart, had hurried after one of his employers to catch a train, and had fallen dead on the slope to the platform as his employer was purchasing tickets for the journey. The actual defendant of the action was an assurance company. The dead man, aged 54, was a clerk engaged almost exclusively on cases under the Workmen's Compensation Act. On July 29th he attended a prolonged inquest at Hawarden Bridge Iron Works, and immediately afterwards hurried after his employer to catch a train. At the inquest the verdict was one of death from natural causes. Two medical men had advised the deceased that although there was degeneration of the heart muscle, he might follow his ordinary occupation if he avoided excessive effort or strain. The defence contended that death was due to disease and not to accident; and that it had really occurred on the completion of his duties. The Judge said it was quite clear that whilst the deceased had suffered for some time from myocardial degeneration, it was also plain that his disease had not been progressive. The immediate cause of death was the excessive exertion against which he had been warned, and this exertion had been brought about by following his employer in the course of his employment, the "accident" in this case being the necessity of rushing to catch the train..

Imported "New Laid" Eggs.

A firm carrying on business in Farringdon-road, E.C., was fined £2 lately for offering for sale "new laid eggs" without including in the description the word "imported" or words disclosing the country of origin from which the eggs had been imported. Two other defendants were fined 40*s.* for the same offence. The "new laid eggs" came from Australia. The prosecution (by the Middlesex County Council)

was presumably undertaken under Article 8 of the Sale of Food Order, 1921, which runs as follows: "A person shall not sell or offer or expose for sale, whether by wholesale or retail, as fresh eggs or new laid eggs or under any description of which the words 'fresh' or 'new laid' form part, any eggs which have been imported into the United Kingdom unless the description also includes the word 'imported' or a word or words disclosing the country of origin."

It is entirely proper that Parliament should provide that eggs which have travelled from Australia should not be sold in London as "new laid" without qualification, and municipal officers are rightly vigilant in enforcing the law. But the law itself might now be recast with advantage. The Sale of Food Order of 1921 is a relic of food control days. Only two of its six parts survive, and these are kept alive somewhat precariously by an extension of the Ministry of Food (Continuance) Act under the Expiring Laws Continuance Acts of the past few years. Part I. of the Sale of Food Order relates to the sale of bread by weight; it seems to be superseded prospectively by the somewhat similar provisions of Section 6 of the recently passed Sale of Food (Weights and Measures) Act which comes into force next July. Presumably Part I. will then be revoked. Part III. deals with the labelling of imported produce (meat, bacon, ham, lard and eggs). Its contents do not appear to be replaced by the recent Merchandise Marks Act which requires imported goods to bear an "indication of origin." Part III., therefore, can hardly be revoked until Parliament passes fresh legislation to take its place. It is advisable that this fresh legislation should not be too long delayed. Restrictions which recall D.O.R.A. and the war period are unpopular. There is consequently a more marked tendency to evade them, and a greater disinclination on the part of magistrates to inflict serious penalties. It is unsatisfactory that considerations of this nature should be allowed any foothold in matters relating to public health.

Milk Bottles Filled in Street.

Under this heading we reported on Dec. 18th, 1926 (p. 1287), that the Brighton justices had fined a milk roundsman and his employer because the roundsman was seen in the street filling bottles from a can and closing them with caps taken from his pocket. The offence was observed by Dr. Duncan Forbes, medical officer of health for Brighton, and the fine was inflicted under the Milk and Dairies Order, 1926. An appeal, however, was entered and was heard at the Brighton Quarter Sessions on Jan. 3rd, when the employer stated that he had not been represented at the first hearing because he thought that the roundsman's evidence would have refuted the charge. He had read the regulations to those working at his registered premises, and had no idea that any bottling was done outside these premises. The Recorder decided that it had not been within the employer's knowledge that the roundsman had done what he did, and quashed the previous conviction, without, however, allowing the appellant's costs.

BRITISH PATHOLOGISTS' ASSOCIATION.

A MEETING attended by some 40 medical men and women, attached as pathologists to various London and provincial hospitals, was held at the London School of Medicine for Women on Jan. 7th, for the purpose of considering the formation of a society to represent the interests of those engaged in the practice of pathology in this country. Dr. S. C. Dyke, pathologist to the Wolverhampton and Staffordshire Hospital, took the chair.

On the motion of Dr. A. G. Shera, of Eastbourne, seconded by Dr. W. Grace, of Chester, it was decided to form such a society, and on the motion of Dr. A. F. Sladden, of Swansea, seconded by Dr. A. Renshaw, of Manchester, it was decided that the name of the society should be the British Pathologists' Association. The aims of the society were laid down as being "to develop the application of pathology in relation to medicine and to protect the interests of those engaged in its study and practice." It was decided that membership should be open to all registered medical practitioners engaged in the study and practice of pathology. The annual fee for membership was set at one guinea, and it was decided that there should be no entrance fee. All those present at the meeting were made eligible for membership; future candidates will require nomination by two members. The following officers of the association were appointed: President, Dr. C. Powell White (Victoria University, Manchester); chairman, Dr. J. G. Greenfield (London); secretary, Dr. S. C. Dyke (Wolverhampton); treasurer, Dr. A. Renshaw (Manchester); members of council, Dr. E. Wordley (Plymouth); Dr. G. Hadfield (Bristol); Dr. A. G. Shera (Eastbourne); Dr. A. F. Sladden (Swansea); Dr. W. Grace (Chester), and Dr. R. V. Solly (Exeter).

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Precautions against Small-pox in the Irish Free State.

THE Department of Local Government and Public Health has issued a circular letter to all health authorities throughout the Irish Free State, drawing their attention to the outbreak of small-pox in England and to the necessity for precautions against its spread to Ireland. The Secretary of the Department reminds the health authorities of the terrible visitations of small-pox in 1871 and 1878, and the varied and serious complications which accompanied the disease. He points out that in addition to the danger to health and loss of life, an outbreak would prove a serious menace to the prosperity of the food and export trade, and would affect the tourist traffic adversely. It is of vital importance that steps should be taken, by vaccination and re-vaccination, to render the population immune. The Minister, therefore, requests the local authorities without delay to take all necessary steps to compel defaulters to comply with the law and to bring to the notice of all those desiring re-vaccination that full facilities for this purpose are at their disposal.

A Surgeon's Action for Fees.

An action was heard last week in Dublin before Mr. Justice Hanna, sitting without a jury, in which Mr. Denis Kennedy, surgeon to St. Vincent's Hospital, claimed £1468 from the executors of a patient. The claim was made for services rendered, but the defendants said that the services alleged had not been given, that the fees charged were not agreed fees, and that they were exorbitant and unfair. While denying any liability, the defendants brought into court the sum of £526, which they said was sufficient to satisfy plaintiff's claim.

Giving evidence of the operations performed, Mr. Kennedy said that he had been in attendance on the patient for nearly two years. He never sent in his account as she never asked for it, but she had said that his fees would be all right. Mr. J. S. McArdle, senior surgeon to St. Vincent's Hospital, was examined and said that the usual fee for operations of the kind mentioned was 100 guineas, but it was not the maximum fee. His minimum fee for such an operation was 50 guineas. Mr. R. C. B. Maunsell, Past President of the Royal College of Surgeons in Ireland, said that the fees charged were good, full fees, but certainly not excessive. Asked if it was not usual to send a bill before the patient died, he said that in some cases it was kind not to do so. In giving judgment for plaintiff for the sum of £680 and costs, Mr. Justice Hanna said that the executors had been right to bring the case into court when faced with a charge which they thought excessive. The amount might have been left to some eminent surgeon, but it might be difficult to get a medical man to decide as between a colleague and an outsider.

PARIS.

(FROM OUR OWN CORRESPONDENTS.)

Diabetes Refractory to Treatment with Insulin.

IT is often said that in certain cases of diabetes insulin proves useless. In a communication recently made to the Académie de Médecine Prof. Marcel Labbé analyses the types of case in which it has no effect, and finds that they include glycosuria due to abnormal function of the kidneys, liver, pituitary, and thyroid, diabetes of very mild type which need not be treated by insulin, and true diabetes aggravated by infection, general anæsthesia, or some other constitutional disturbance. In most cases of apparent resistance to treatment it is questionable, he says, whether the dietetic régime is properly carried out by the patient: in many others the dose of insulin given is insufficient, especially where the condition is made worse by infection. Insulin is a powerful drug having a physiological action which is certain, although not yet been shown to be curative. According to Prof. Labbé, insulin is always effective when properly used and there is no such thing as a form of true diabetes refractory to its action.

Splenectomy for Purpura Hæmorrhagica.

Two years ago a girl of 9 developed serious purpura with repeated hæmorrhages. Her condition grew worse in spite of all treatment and there were only two remissions, one of them after injection of maternal whole blood and the other after radiotherapy. Neither proved more than transitory and death appeared imminent when Lafourcade, of Bayonne, performed splenectomy. The result exceeded all hopes and was evidently due to the operation alone, for the child has had no other treatment since it was done. This case may be added to the few already published—one in France and a score abroad—in which splenectomy has cured recurrent hæmorrhagic purpura.

Malaria in Two French Districts.

In the Department of the Ain there is a district called Les Dombes which until the end of last century was always very marshy. The construction of a railway made it necessary to drain a large part of it, and little by little the country has been rendered prosperous. Prof. Marchoux, of the Pasteur Institute, was sent to study malaria in this district, and states that although there are always many ponds and millions of anopheles, malaria has disappeared. The sporadic cases which are met with do not lead to infection around them. He has made a similar study at La Camargue, which is in the Rhone delta and is an island of very fertile soil. Here the proprietors have become wealthy and recruit their labour amongst foreigners—Italians, Spanish, Serbs—who work under contract, are badly lodged and poorly fed, and labour without rest. Malaria persists everywhere. from which it may be concluded that the malarial incidence does not vary as the number of anopheles. These are mainly parasitic to animals and abound when animals are found within easy reach. When, on the other hand, man is their only prey, they multiply with difficulty but infect themselves with certainty and are a sure source of infection to people living in the district.

Asthma and Ultra-violet Light.

Before the Société de Thérapeutique, Saidman has given particulars of the technique useful in treating asthma by irradiation. The polymetallic arc, he says, is satisfactory in 80 per cent. of cases; with the same doses the mercury-vapour lamp gives only 46 per cent. of successes. An intense source of light should be used and it should cause erythema. The curative properties seem to be due to the associated effects of the ultra-violet and infra-red rays, of the gas released by the arc, and of the ionised air. Cure is much more rapid in children, and sometimes, when there is no enlargement of tracheobronchial lymph glands, the attacks disappear after a single sitting. In adults the effects are less consistent and the treatment longer, but relapse may be prevented by periodical treatment.

Influenza in Paris.

Influenza was exceedingly prevalent at Paris during December, when it caused 180 deaths per day. Between Dec. 11th and 20th, when the epidemic reached its peak, the daily average mortality was 198, but since then it has rapidly subsided. Admissions to hospital have fallen from 698 on Dec. 17th to 493 on Jan. 8th. Favourable weather has caused a similar decrease in influenza at Montpellier.

Among the more important meetings of the present year will be an exhibition of medical appliances and therapeutic products, at Lyons, in March; the Sixth National Tuberculosis Congress, at Lyons, from April 11th to 14th; the Annual International Neurological Assembly, from May 30th to June 1st; the French Congress of Alienists and Neurologists, from August 1st to 6th; the Fifth French Pædiatric Congress, at Lausanne, during September and October; the Thirty-sixth Surgical Congress, from October 3rd to 8th; the French Medical Congress, from October 10th to 14th; and the Congress of Hygiene, at the Pasteur Institute, in October.

The Association for the Development of Medical Relations is gaining an increasing influence abroad. It is now assisting in the organisation of a medical library at Warsaw, and receives large groups of visitors from Poland, the United States and elsewhere: a special reception was recently given in honour of Prof. Clemens von Pirquet, of Vienna. The Association has sent physicians and surgeons to Serbia, Egypt, the Near East, and Colombia, and is ready to provide information about French post-graduate courses in medicine, surgery, and obstetrics.

The total number of medical diplomas awarded by French universities during 1925–26 was 1242, of which 651 were given at Paris. Of these diplomas 1132 conferred the right to practise medicine in France and the French colonies, whilst the rest provided only the university grade without State rights. After Paris, the largest numbers of degrees were awarded by the universities of Lyons (166), Bordeaux (127), and Montpellier (113).

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Lt.-Comdrs. R. K. Shaw and G. L. Ritchie to be Surg. Comdrs.

ROYAL ARMY MEDICAL CORPS.

Capts. to be Majs.: N. Cameron and W. S. Evans.

ARMY RESERVE OF OFFICERS.

Lt.-Col. J. Matthews, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY RESERVE OF OFFICERS.

Capt. E. Coplans, from the Active List, to be Capt.

TERRITORIAL ARMY.

Capt. R. W. Swayne to be Maj.

INDIAN MEDICAL SERVICE.

Maj. W. C. Gray to be Lt.-Col.

Temp. Lts.: Subbier Annaswami, Sarveshwar Nath Kaul, Hari Narain Shivapuri, Amar Nath Duggal, Homi Meherjibhoy Setna, Bankim Kumar Pal, Chandranan Joshi, and Kongattil Madhava Menon to be Temp. Capts.

Benegal Mukunda Rao to be Temp. Lt.

The King has approved the retirement of Maj. Sir Thomas J. Carey-Evans.

FORMER PATIENTS ENDOW A BED.—Some months ago an Old Patients' Association was formed for the upkeep of one or more beds in the Salford Royal Hospital. Members promise to give a minimum subscription of half-a-crown a year and the first bed has now been endowed.

Obituary.

SIR ISAMBARD OWEN, M.D., CAMB. & DURH., F.R.C.P. LOND., HON. D.C.L., LL.D.

WE regret to announce the death of Sir Isambard Owen, consulting physician to St. George's Hospital, but more widely known as a strenuous and successful pioneer in the cause of higher education. The event occurred in Paris on Jan. 14th.

Isambard Owen was born near Chepstow in 1850, the son of William George Owen, chief engineer to the Great Western Railway, who worked under the famous engineer, Isambard Brunel, after whom he named his son. Isambard Owen was educated at the King's School, Gloucester, Rossall, and Downing College, Cambridge, where he graduated in natural science. He proceeded to St. George's Hospital, where he held the usual junior posts, took the M.B. at Cambridge in 1876, became curator of the museum, and in 1882 was elected assistant physician. At the hospital he lectured on materia medica and clinical medicine, and his out-patient classes were largely attended, for a highly sympathetic manner enabled him to deal with his patients with great shrewdness. They enjoyed the particular stress which he would lay upon their family histories, and many valuable lessons in private practice were acquired by those who followed Owen's demonstrations. He wrote at this time a small book on materia medica, and both in the out-patient department, as later in the wards, he paid particular attention to the art of prescribing.

In 1883 he was appointed physician to the Brompton Hospital, but resigned the following year, when he became Dean of the medical school at St. George's. Pre-eminently a man of affairs and an organiser of reforms, St. George's Hospital Medical School owes much to his initiative and foresight in this capacity of Dean. For example, in 1895 the first lectureship in tropical medicine in London was established there in the person of Sir (then Dr.) Patrick Manson, who held it until 1908. Before this, as Medical Registrar and Curator of the Museum, his orderly and systematic mind had been much in evidence, and he recatalogued and described the specimens in the Museum on a uniform plan. One of his colleagues writes of Owen as a hospital physician, thus: "He was a clear teacher and was particularly good on physical signs, which he imitated in a way that his clinical clerks remembered. Genial, dignified, and with something of the grand manner, he was a master of the suaviter in modo. His methodical character and complete freedom from any sign of hurry or personal annoyance enabled him to carry through work on many different lines successfully and smoothly; for while Dean and physician to the hospital, in consulting practice, and examining at various universities and licensing bodies, he cheerfully spent much time and energy on schemes for the establishment of a Gresham University in London and a National University in Wales, he really seemed to enjoy drafting official documents and regulations, a pursuit in which he was an acknowledged expert." His duties, it should be said, were discharged very often under stress of ill-health, for in early days, when travelling with a Napoleonic Prince, he had picked up some form of fever which frequently recurred. He was recognised, however, as a sound clinical physician, and was early in the field as an inquirer into the association of disease with habitual intemperance, his work in this direction being done for a collective investigation of a Committee of the British Medical Association, to which he acted as honorary secretary. He was appointed an examiner in medicine at different times to the Universities of Cambridge, London, and Durham, at the Royal College of Physicians of London (of which he became a Fellow in 1885), and at the qualifying examination for commissions in the R.A.M.C. He was also a highly successful secretary of the Medical Society of London, being largely responsible for the reconstruction of the Society's premises.

But it is in the world of education, as is suggested above by his colleague, that Owen made his mark. His well-known work in connexion with the Universities of Wales, of Durham, and of Bristol had its opening phases while he was still on the active staff of St. George's Hospital and practising as a consultant physician. In fact it began in his undergraduate days. Between the years of 1870 and 1890 three university colleges had been founded in Wales, namely at Aberystwyth, Cardiff and Bangor, and a movement was started for the establishment of a National University of Wales with these colleges, which were receiving Government support, as the constituent bodies. A conference was held at Shrewsbury at which the county educational authorities and the Colleges were represented, and Owen's duty in drafting, as secretary, the report of the findings received a remarkable recognition, for the conclusions of the conference as formulated by Owen proved to be substantially the basis of a University charter which was granted in 1893. In 1894 he was appointed senior deputy chancellor of the University of Wales, in which capacity he installed King Edward VII., then Prince of Wales, as Chancellor. For the next ten years, while maintaining his deep interest in education and especially in the new University of Wales, he remained in consulting practice in London, lectured in medicine at St. George's and was vice-dean of the medical faculty of the University of London. But in 1904 he gave up medical practice to accept the position of Principal of the Armstrong College, Newcastle, where his constructive capacities in relation to the higher education again received striking endorsement, for four years after Owen's arrival in Newcastle an Act of Parliament was secured reconstituting the University of Durham in a way which placed the Armstrong College on a proper footing as well as the Durham Colleges, and greatly strengthened the University of Durham and its medical school. The close coöperation of the great city of Newcastle with the development of University life in its midst was thus secured. This valuable work was done in five years, and in 1909 he became Vice-Chancellor of the new University of Bristol, and threw himself into the task of building up in that great city an institution that was composed of a fusion of three existing bodies whose interests were not necessarily identical. The long war intervened at a critical period in the life of the young university, nor did the circumstances of peace bring relief to the Vice-Chancellor's work, which however, he carried on unremittingly, only retiring in 1921. He remained on the governing bodies of the three constituent Welsh Colleges, was knighted in 1902, and again had the honour of installing a Prince of Wales as Chancellor of the University of Wales. The Universities of Wales, Durham, and Bristol gave him honorary doctorates. He was for many years a member of the General Medical Council representing the University of Bristol.

Owen in private life was a particularly charming man, and his great success in affairs owed as much to his powers of sympathy and his conciliatory reasonableness as to his logical grasp of general designs, and his untiring industry. He was a good public speaker, and at the various cities where his official duties took him, his social gifts much increased his influence in shaping the plans that he conceived. During his career in London he was a bachelor, but, on removing to Newcastle, he married in 1905 Ethel, daughter of the late Lewis Holland-Thomas, of Caerffynnon, Merioneth, by whom he had two daughters.

EDWIN STEPHEN PASMORE, M.D., M.R.C.P., LOND., D.Sc., LL.D.

THE death of Dr. Pasmore at the age of 62 years is a heavy loss to the county borough of Croydon where he had been in charge of the mental hospital since its foundation a quarter of a century ago.

Edwin Stephen Pasmore was the son of Capt. John Pasmore, and was born at Falmouth in 1864. He studied at the Universities of London, Paris and Brussels, taking his medical degree from University College, London, in 1890 and his doctorate in the following year. After holding house appointments at University College Hospital and Ramsgate he became clinical assistant to Sir William Gowers at Queen Square and from that time onwards was deeply interested in mental welfare and took a leading part in furthering the public mental hospital movement in this country. In 1893 he was appointed pathologist first to Banstead — where he came under the stimulating influence of Dr. Claye Shaw, whose death almost synchronised with his own—and then to others of the L.C.C. asylums and in 1902 he was chosen physician-superintendent to the mental hospital at Warlingham, then in course of construction by the borough of Croydon. This hospital which from its inception was furnished with X ray rooms, pathological laboratory, operating theatre and every modern appliance, was the scene of his subsequent work and a constant source of pride to him personally. It was there that the word "asylum" was abolished for the first time in the title of a hospital for the care of mental invalids, and Dr. Pasmore was always careful to point out that the Cardiff and the City of London Asylum at Stone in styling themselves "mental hospitals" were following the lead given at Croydon. The institution justified its description, for its average recovery rate over a period of ten years was somewhere about 42 per cent. Dr. Pasmore himself was specially interested in the clinical classification of mental disorder which he based upon ætiological and pathological grounds, in the belief that accompanying certain physical states of the body were certain trains of mental symptoms and that from this correlation of mental and physical states it was possible to build up a useful classification of insanity. He was insistent that a fully equipped laboratory should be attached to all mental institutions in order that the range of disease might be scientifically investigated. During the last few years he lectured on abnormal psychology in an honorary capacity at University College.

Those who knew Dr. Pasmore personally at Warlingham enjoyed his breezy genial personality, and his presence at the monthly meetings of the Croydon council infused a kindly cheerfulness which was always more than welcome to his colleagues. "Of the remarkable efficiency of his management of a large mental hospital," writes one of his colleagues, "there could be no two opinions. The sense of system and order infused with personal interest and care, apparent to the official and unofficial visitor to the institution, was as constant as it was striking. There could be no doubt that efficiency of control had its counterpart in efficiency of treatment resulting in the large measure of cure or amelioration indicated in Dr. Pasmore's periodic reports. His death will make his colleagues the poorer by the loss of a personality, often enthusiastic, always considerate and kindly."

Many schemes of social betterment found in Dr. Pasmore a ready helper. With the late Dr. J. L. Pinnell he founded the University College Working Lads' (now the St. Christopher Boys') Club. At Ramsgate he started a Hospital Saturday Fund. He held the Order of Mercy. His widow, who survives him, was daughter of Mr. John Screech.

Correspondence.

"Audi alteram partem."

PULMONARY EMBOLISM FOLLOWING OPERATION.

To the Editor of THE LANCET.

SIR,—The interesting article in your last issue by Dr. W. A. Lister brings out forcibly the relationship between pulmonary embolism after operation and (1) the age of the patient, and (2) the site of the incision. The results are fully in accord with what has been observed in practice. Important as these points are, however, they are only "accessary after the act" and do not give much clue to the cause of this disastrous complication after what are frequently very slight operations. I have known it occur after an aseptic removal of a small toe.

I think that great light might be brought to bear on the condition if a series of tests were made before and after operation on the clotting time of the blood. I began to make such tests when I was in a position to do so, and found that in about 20 cases the clotting time was diminished about one minute as the result of the operation or anæsthetic. This in the normal person is probably beneficial, whereas in the person whose clotting time is short a further diminution may lead to the complication referred to. In such a patient, if the condition were known beforehand, any cyanosis or impediment to respiration during operation would suggest some modification of the anæsthesia, especially by dilution with oxygen for such time as might be necessary. Whether the clotting is due to diminution of oxygen intake or of carbonic acid output does not matter, the treatment would be the same. A history of previous attacks ought always to lead to a blood examination, and due attention should be paid not only to typical fatal and non-fatal attacks, but to "pleurisy," "pain in the chest," or "pneumonia" following within a fortnight of an operation. In one family whom I attended, a sister had attacks in three out of four confinements, and two brothers had attacks after operation for simple appendix—one brother two slight ones and the other one fatal in less than five minutes. The blood of a daughter of the sister was a rapidly clotting one, and before an operation for appendicitis she was given citric acid as a precaution.

I am, Sir, yours faithfully,

H. A. DES VŒUX.

Ashley-gardens, S.W., Jan. 14th, 1927.

To the Editor of THE LANCET.

SIR,—Perusal of Dr. Lister's valuable paper prompts me to ask whether there are any other prophylactic measures possible, apart from massage of the lower limbs and breathing exercises. The method generally adopted of applying an abdominal binder does very little, in my opinion, to prevent the stretching of the incision, which occurs with each downward movement of the diaphragm. Personally, I have no doubt that much firmer pressure can be applied to the incision by means of the "anchor dressing." In this, silkworm gut sutures are passed, either through the whole thickness of the abdominal wall, or through all except the peritoneum, and then tied over the dressing. I believe that patients treated in this manner suffer less pain than those treated with a binder, as the "anchor dressing" limits the stretching of the incision.

Dr. Lister's observations upon the incisions for the radical cure of herniæ, emphasise the importance of firm pressure applied to the operation incision. Anchor dressings may be difficult, or impossible, to apply in cases where drainage is required, but here I would like to urge the claims of vaginal drainage, rather than abdominal, in cases of pelvic suppuration. I invariably adopt this method of drainage, and have

no hesitation in saying that convalescence in these cases is much more comfortable and rapid than it would have been were abdominal drainage adopted. Again, the advantages of operating by the vaginal route, rather than the abdominal, whenever possible, is appreciated by most gynæcologists. I think I can safely assert that the tendency amongst the younger gynæcologists is to operate by the abdominal route rather than the vaginal. Vaginal hysterectomy appears to be rather out of fashion in these days, but it may be that Dr. Lister's paper will bring this into the limelight again.

If we can avoid an abdominal incision so much the better. Dr. Lister has shown us what an important factor it is in the production of pulmonary embolism.

I am Sir, yours faithfully,

TREVOR B. DAVIES.

Harley-street, London, Jan. 18th, 1927.

IMMUNITY TO IMPLANTED TUMOURS.

To the Editor of THE LANCET.

SIR,—Dr. Lumsden's paper in your last issue, on the immunity to implanted tumours, raises many issues for controversy. There is, however, one which appears to be of outstanding importance. Fig. III. A and Fig. V. A of his paper are described as microphotographs of normal in vitro cultures of a mouse carcinoma and of a human carcinoma showing cancer cells. They serve as controls to other illustrations. In each figure are to be seen scattered cells, entirely separate from one another. Now in my experience carcinoma cells do not grow in vitro in this way; they extend out from the implant in the form of continuous sheets, or less often columns, of cells. In Fig. III. A the cells have the appearance of small wandering connective tissue cells, and in Fig. V. A of fibroblasts. The question raised therefore is, are these cells cancer cells, or are they normal cells derived from the stroma?

The figures open another consideration. Referring again to Fig. V. A, it is certain that, at any rate, some of the cells are fibroblasts, and yet in the illustrations for which this figure serves as a control, all the cells exhibit cytolysis. It is remarkable that if anticancer sera are being used, normal cells should also suffer destruction. If in a culture of carcinoma normal cells degenerate as well as the cancer cells, it is evident that antibodies against cancer are not being dealt with. Inoculated cancers do not, of course, form pure antigens, seeing that they consist of cancer cells derived from some unknown animal mixed with normal cells from the animal from which the tumour was removed.

Nevertheless, the question arises, why are normal cells, present in cultures of carcinoma, cytolysed by anticancer serum.

I am, Sir, yours faithfully,

J. C. MOTTRAM.

The Radium Institute, London, W., Jan. 17th, 1927.

A METHOD OF ELECTRICAL TREATMENT FOR ENLARGED PROSTATE.

To the Editor of THE LANCET.

SIR,—Respecting the causation of prostatic hypertrophy it is agreed that little is known, but probably a sedentary life with enfeebled circulation in the extremities causing chronic congestion is conducive to the condition. It has been estimated that 1 in every 3 men over the age of 60 complains of symptoms caused by an enlarged prostate. A catheter life is not a pleasant prospect with the possibility of a major operation, for it seems that prostatic diseases are always to be the province of the surgeon and only inoperable cases are sent to the medical electrician.

In the many text-books and articles consulted I have not found any collocation of ideas respecting the electrical treatment of the prostate; information has therefore to be sought in various works. The method I am using will perhaps be better understood if I give here a brief summary of different electrical methods applied in the treatment of prostatic disease.

(*a*) *X rays* have been successfully used in this disorder.

(*b*) *Diathermy* benefits prostatitis and prostatic hypertrophy and atony of the bladder. It reduces pain and is killing to some germs. Cumberbatch's excellent work at St. Bartholomew's Hospital is well known.

(*c*) *High Frequency.*—Eberhart states that results from high-frequency treatment of all forms of prostatic disease are extraordinary; 90 per cent. of his cases have been apparently cured without a case in which perceptible improvement was not observed. He has had positive reduction in cases of senile hypertrophy, and considers high frequency to be vibration causing cellular massage, and as the current increases in frequency and voltage it is capable without an electrode of traversing long distances as do ether waves in wireless.

(*d*) *Static Electricity*—Franklinisation—"Morton's wave."—Wm. James Morton, of New York City,[1] stated: "Static electricity is considered superficial and incapable of penetrating deeper tissues, but electro-statics will give a current that will demonstrably penetrate the human tissues as it can be demonstrated that any other current will penetrate them." But Cumberbatch states: "The mode of action of the static wave current is most probably mechanical, the sudden forcible rhythmic muscular contractions aiding the local circulation and the removal of inflammatory products." I would refer to "Electro-therapeutics," by Humphris, under Chronic Enlargement of the Prostate, pp. 187–193. Considering the action and excellent results, one must think of Morton's wave as a "prostatic squeeze," inter alia emptying the vesiculæ and prostatic follicles. I am unable to find any reference to prostatic treatment by faradism, possibly for the reason that it has not been used as strong currents cause pain and disgreeable sensations.

In view of the results obtained by Morton's wave by tuning and regulating the current, I cause faradism to give an effect similar to Franklinism—Morton's wave. Be it remembered that in Morton's wave a spark which occurs at some distant part of the necessarily closed circuit causes a steady current of successive electrical impulses, blows, or tugs.

I use a Smart-Bristow coil in which the current is derived from the secondary coil, and its strength is varied by sliding the iron core in or out of the primary coil. The secondary coil is so constructed (bound with somewhat coarse wire) as to produce painless muscular contractions; these contractions are governed by the switch—either one, two, three, or four divisions of the secondary winding—and the iron core or plunger, and I tune them (the contractions) rhythmically by placing a metronome interrupter in circuit. The metronome I time to synchronise with the heart-beats. An ordinary zinc electrode is inserted in the rectum, but preferably I would use the rectal electrode designed by Dr. St. Aubyn Farrer; a broad, flat electrode is placed over the hypogastric region, but it can be applied anywhere on the abdomen. If there is any objection from the patient to inserting the electrode in the rectum, confidence can be given by the use of a small, flat electrode on the perineum.

The treatment is continued for 10 to 15 or 20 minutes. Great benefit has been obtained; micturition has become less painful, not so frequent by day and night, and in a stronger stream; there is a feeling of lightness in the perineum and prostatism begins to disappear. I have applied this treatment to a hard prostate, but should expect an even better result with an enlarged soft vascular prostate.

A static machine with its working complements is costly to instal and for its current depends largely

[1] Medical Record, Jan. 24th, 1891.

upon the weather. All the apparatus I use can be obtained for quite a modest sum. A word of warning is here necessary—galvanism must never be used; the metronome will only interrupt or reverse the direct current, but will not do away with its chemical or electrolytic action. This can be proved by means of pole-testing paper. It is also unwise to use a faradic current attached to a galvano-faradic battery, as sometimes there is a leakage of direct current. The Smart-Bristow battery should be used instead. Faradism cannot produce electrolysis, but the ordinary faradic apparatus has usually fine windings which cause painful tetanic muscular contractions. It should always be ascertained that terminals and switches are properly adjusted so as to ensure a smooth and even current.

I am, Sir, yours faithfully,

FREDK. WM. ALEXANDER.

Teddington, Jan. 18th, 1927.

TREATMENT OF TUBERCULOSIS BY MR. SPAHLINGER'S METHODS.

To the Editor of THE LANCET.

SIR,—I am obliged to Dr. Nelson for his courteous reply to my letter. Although it now appears that Thomas Henry Allen's case was indeed among the Spahlinger Latham records at St. George's and that Dr. Nelson excluded it from his survey, it gives me much pleasure freely to acknowledge that the circumstances surrounding the exclusion completely exonerate Dr. Nelson from any suspicion of bad faith. Arguing from the record alone, Dr. Nelson was quite justified in concluding that Allen had never had tuberculosis. There are nevertheless certain facts which point with emphasis in the opposite direction. Allen himself insists upon the emaciation, and his wife bears eloquent testimony to a hæmoptysis. At the French Hospital we regarded him as an early but rapidly progressing case, and our view was supported by several competent physicians, including Latham himself. When, under the circumstances mentioned in my last letter, I was requested to remove Allen and Grace Edney from the French Hospital, I asked Latham if he would take them and put them among the Spahlinger cases at St. George's. He came to the French Hospital where he examined these two cases, and agreed to do as I suggested. No one with a recollection of Latham, however slight, could suppose that he would have accepted Allen had he not been satisfied that the case was clinically one of tuberculosis; and an affirmative from such a source is worth many negatives. Moreover, if Latham had afterwards come to the conclusion that Allen was not a case of tubercle, it is not only curious, it is astounding, that in the many conversations which we had together on the subject of the Spahlinger treatment he should not have mentioned the fact. He certainly never did.

It is very kind of Dr. Nelson to invite me to study with him the records at St. George's. But if only for the reason that my acceptance might be misconstrued into a doubt of his veracity, I must beg him to have me excused.

En revanche, let me suggest to Dr. Nelson that if he is really desirous of estimating the value of the Spahlinger treatment, he should arrange to accompany me to Geneva, where I will undertake to show him enough in records and living testimony to convince him that, at its lowest, it is the part of a wise physician to preserve an open mind on a subject which has been so sadly overlaid with prejudice and *parti pris*. Your obedient servant,

Harley House, Jan. 18th, 1927. LEONARD WILLIAMS.

ULTRA-VIOLET RADIATION.

To the Editor of THE LANCET.

SIR,—No definite technique has as yet been established in ultra-violet therapy, and as the alternate exposures with carbon and mercury arcs adopted by Drs. Punch and Wilkinson were somewhat unusual, I had hoped to elicit the theory on which their technique was based. Beyond stating that the carbon arc is richer in the near and more penetrating ultra-violet rays and the mercury vapour in the far ultra-violet rays, no explanation is offered. It is difficult to see why near and penetrating ultra-violet rays should be indicated at one exposure and a greater concentration of far ultra-violet, which have very little penetrating power (in fact, those below 2400 A° units do not penetrate at all) should be indicated at the next exposure. It might surely be assumed that as the treatment proceeded more and not less penetrating rays were necessary.

On the question of local treatment, I asked why the tungsten arc was used in preference to either of the mercury-vapour lamps and not to the Kromayer alone, which, admittedly, might be inconvenient for a large area. The authors make no comparison between the air-cooled mercury vapour and the tungsten arc. Personally I have not noticed any superiority in the tungsten arc over the mercury vapour for softening any tissue, nor am I aware that anybody has yet demonstrated that the different concentration of energy along the tungsten arc spectrum is likely to give local effects superior to those obtained with the mercury vapour. In recent articles I have noted a tendency towards the use of a number of lamps on the same patient, no explanation (except where the area to be treated makes it obvious that one lamp was more suitable than another) being offered. I had hoped to find some reason for this tendency.

I am, Sir, yours faithfully,

London, W., Jan. 11th, 1927. M. WEINBREN

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a quarterly meeting of the Council held on Jan. 13th Sir Berkeley Moynihan, the President, in the chair, Princess Mary, Viscountess Lascelles, was elected an Honorary Fellow of the College in recognition of her work in connexion with the nursing profession and hospitals.

Sir Berkeley Moynihan was elected to represent the College at the celebration in London of the centenary of the birth of Lord Lister which falls on April 5th.

The Diploma of Fellow was conferred upon Clifford I. N. Morgan, M.B. Lond. (Cardiff and St. Bart.'s).

Diplomas of Member were conferred upon J. H. Couch, M.B. Toronto (Toronto), T. M. Jones, M.B. Liverp. (Liverpool), and Joyce McConnell (Royal Free Hosp.).

The Licence in Dental Surgery was conferred upon F. H. Channon (Guy's).

The undermentioned diplomas were conferred (jointly with the Royal College of Physicians) upon the following candidates:—

DIPLOMA IN PUBLIC HEALTH.

M. L. Bahl, Marjorie Broadbent, Madeleine H. Clarke, Kathleen Davies, Muriel Davies, J. Fanning, Dorothea C. Forbes, W. L. Forsyth, L. I. Henzell, K. H. Kamakaka, Dorothy L. M. Keats, A. H. Kynaston, A. S. MacNalty, S. M. Mallick, B. S. Manghirmalani, G. O. Mitchell, A. G. Morison, B. R. Nisbet, Helen O'Brien, Evelyn D. Owen, A. C. T. Perkins, Q. M. Said, J. B. Samson, T. G. N. Stokes, C. I. Streich, and Elsie Warren.

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

M. Abd-el-Hakeem, P. Banbury, E. A. Bennet, J. Bennet, A. G. Duncan, Isabella A. Gillespie, J. Heron, F.L. McDaniel, H. B. Porteous, and H. T. Retallack-Moloney.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.

R. T. Desai, L.W. Johnston, O. F. A Krause, G. S. Macdougall, J. E. G. McGibbon, N. M. Rao, and T. Williams.

ROYAL NAVAL DENTAL SERVICE.—At the recent competitive examination for entry into the Service, the following candidates were successful:—

William Edward Loftus Brigham, Leslie Foster Fairey, Sidney Mawer, Frank Drummond Manners, Leonard Austrim Moules, George Baker, William Charles George Ford, Leslie Robert Armstrong, and Harold Macklow Hill.

ROYAL SOCIETY OF MEDICINE.—The Section of Surgery is arranging to hold a debate on the Treatment of Cleft Palate on Wednesday, June 1st, at 5 P.M. Sir James Berry will open the debate, Mr. Grey Turner will speak second, and a large number of other surgeons will take part. It is proposed that all speakers shall present statistics and show cases to demonstrate the speech result.

AT the quarterly meeting of the Directors of the Naval Medical Compassionate Fund, held on Jan. 18th, Surgeon Vice-Admiral Sir Joseph Chambers, K.C.B., C.M.G., Medical Director-General of the Navy, in the chair, the sum of £135 was distributed among the several applicants.

UNIVERSITY OF CAMBRIDGE.—The third annual Sims Woodhead memorial lecture will be delivered in the Arts School, Bene't-street, Cambridge, on Thursday, Jan. 27th, at 5.15 P.M., by Mr. W. McAdam Eccles, whose subject will be Alcohol in the Light of Modern Research: Points Accepted and Disputed. The Vice-Chancellor will preside. The memorial secretary is Mrs. D. Moore, Cambridge-road, Histon, and seats will be reserved on a train from London.

AMALGAMATION OF ARMY NURSING SERVICES.—Queen Alexandra's Imperial Military Nursing Service and Queen Alexandra's Military Families Nursing Service have been amalgamated by Royal Warrant. The combined service will be named "Queen Alexandra's Imperial Military Nursing Service," and its members will wear the existing uniform and badge of the Military Nursing Service.

GRESHAM COLLEGE.—Four lectures entitled a Survey of the Public Health will be delivered at 6 P.M. on Jan. 25th, 26th, 27th, and 28th, by Sir Robert Armstrong-Jones, at Gresham College, Basinghall-street, London, E.C. The lectures will be based on the report for 1925 of the Chief Medical Officer of the Ministry of Health, and admission will be free.

EXTENSION OF PLYMOUTH MENTAL HOSPITAL.—Plymouth Town Council has decided to spend £149,000 upon the first instalment of necessary extensions of Blackadon Mental Hospital; the entire scheme is expected to cost £216,000. The works now authorised include an admission hospital, an infirmary, and a nurses' home.

COVENTRY HOSPITAL.—A cheque of £21,650, made up largely of weekly contributions by work-people, has been handed over by the Coventry Hospital Saturday Committee to the local hospital.

ACCIDENTS AND INQUESTS IN LEEDS.—The annual report of the Leeds city coroner shows a big increase in the number of deaths due to accidents on the road. In 1926 the number of inquests held in these cases increased from 50 to 77. The total number of cases reported to the coroner was 682, and 631 inquests were held.

WOLVERHAMPTON HOSPITAL.—The Wolverhampton and Staffordshire Hospital is about to be enlarged by the erection of new out-patient and casualty departments and the provision of two children's wards, at a cost of £46,000. A suite of rooms, separate from the out-patients' department, is to be provided for accidents and casualties, and the present 20 cots for children will be doubled.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On Thursday, Jan. 27th, the opening lecture of the new series on Emergencies in Medicine and Surgery will be delivered by Dr. L. S. Burrell at 5 P.M. at the rooms of the Medical Society of London, 11, Chandos-street, Cavendish-square. The subject is Hæmoptysis. On Tuesday, Jan. 25th, at 2 P.M., Mr. Victor Bonney will give a special demonstration for the Fellowship at the Chelsea Hospital for Women. On the same date, at 3.15 P.M., Dr. Malcolm Donaldson will give a lecture on Salpingitis at the Royal Northern Hospital. These lectures and the demonstration will be open to members of the medical profession without fee. From Jan. 31st the London School of Dermatology (St. John's Hospital) will hold a four week's clinical course consisting of instruction in the out-patient department and bi-weekly lectures. Classes in pathology will be arranged if required. From Feb. 7th the London Lock Hospital will give a four weeks' clinical course in Venereal Diseases, together with a formal series of lectures. Starting on the same date there will be a two weeks' combined course in Diseases of Children in which the Paddington Green and Victoria Hospitals will participate; there will be morning and afternoon sessions. The Royal Northern Hospital is holding a course for general practitioners for one week from Feb. 21st; no fee will be charged. The Fellowship also arranges for courses in obstetrics and anæsthetics. Arrangements can be made for obtaining appointments as clinical assistants at the Samaritan Hospital. Syllabuses of the special courses and copies of the programme of the general course and of the *Post-Graduate Medical Journal* may be had from the Secretary of the Fellowship at 1, Wimpole-street, London, W. 1.

ROYAL INSTITUTION.—On Friday, Jan. 28th, at 9 P.M., Prof. E. P. Cathcart will lecture on the Physique of Women Employed in Industry.

DONATIONS AND BEQUESTS.—Mr. Robert Bower Sharp, Fernhall, Broughty Ferry, jute merchant, besides bequests to employees, gave £5000 to the Royal Victoria Hospital, £3000 to the Sidlaw Infirmary, £2000 to the Convalescent Home, Barnhill, and £3000 to the Dundee Sick Poor Nursing Society.

DENTAL BEDS IN A GENERAL HOSPITAL.—The Royal Dental Hospital has arranged for 12 beds in a London general hospital to be at its disposal for use by such of its patients as are in need of hospital treatment. The intention is that dentists from the Royal Dental Hospital shall perform their most serious operations at the general hospital so that patients may be properly cared for both before and after the operations.

ROYAL ALEXANDRA HOSPITAL FOR SICK CHILDREN.—In memory of Queen Alexandra, it has been decided to build a new block at the Royal Alexandra Hospital for Sick Children, Brighton, at a cost of £10,000. The new block will include an irradiation clinic, an up-to-date operating theatre, a room for anæsthetics, and additional accommodation for the resident medical staff. It is hoped to complete the work in 1928.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.

THURSDAY, Jan. 27th.—4.30 P.M. *The following papers will be read:* L. A. Harvey: The History of the Cytoplasmic Inclusions of the Egg of Ciona Intestinalis (L) during Oögenesis and Fertilisation. (Communicated by Prof. E. W. MacBride.) S. Dickinson: Experiments on the Physiology and Genetics of the Smut Fungi. Hyphal Fusion. (Communicated by Sir John Russell.) J. W. H. Harrison: Experiments on the Egg-laying Instincts of the Sawfly Pontania salicis Christ. and their Bearing on the Inheritance of Acquired Characters with Some Remarks on a new Principle in Evolution. (Communicated by Prof. E. W. MacBride.) S. A. Asdell and F. H. A. Marshall: The Effect of the Ovarian Hormone in Producing pro-Œstrous Development in the Dog and Rabbit. E. Ponder: The Measurement of Percentage Hæmolysis. II. (Communicated by Sir E. Sharpey Schafer.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Jan. 24th.—8 P.M., ODONTOLOGY. Dr. J. H. Maclean: The Bacteriology of Dental Caries. Prof. H. P. Pickerill (New Zealand): Non-eruption of Teeth.

TUESDAY.—5 P.M., MEDICINE, SURGERY, LARYNGOLOGY. Special Discussion on the treatment of Chronic Non-Tuberculous Infection of the Lungs. Speakers: Dr. L. S. T. Burrell, Dr. F. Chandler, Dr. Geoffrey Marshall, Dr. K. Douglas Wilkinson (Medicine), Mr. Tudor Edwards, Mr. J. E. H. Roberts, Mr. H. S. Souttar (Surgery), Mr. G. Ewart Martin, Mr. C. A. S. Ridout, Mr. V. E. Negus (Laryngology).

WEDNESDAY.—5 P.M., COMPARATIVE MEDICINE. *Paper:* Dr. T. W. M. Cameron: The Parasites of Animals and Human Disease.

THURSDAY.—8.30 P.M., UROLOGY. Mr. Graham S. Simpson: Hæmangioma of the Kidney. Mr. F. J. F. Barrington: Nerve-supply of the Bladder.

FRIDAY.—5 P.M., STUDY OF DISEASE IN CHILDREN. (Cases at 4.30 P.M.) 8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Dr. M. Greenwood and Dr. Janet Lane-Claypon: On the Possibility of Effecting a Reduction in the Present Mortality-rate from Cancer of the Breast and of the Uterus. Exhibit; Fleet-Surgeon W. E. Home will show a Jenner letter and a portrait, in oil, of Francis Home (1719–1812).

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Jan. 24th.—8.30 P.M., Pathological Evening.

ST. JOHN'S HOSPITAL DERMATOLOGICAL SOCIETY (Incorporating the London Dermatological Society), 49, Leicester-square, W.C.

WEDNESDAY, Jan. 26th.—4.15 P.M., Clinical cases will be shown.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Jan. 24th, to SATURDAY, Jan. 29th.—FELLOWSHIP OF MEDICINE. Special lecture at the Medical Society of London, 11, Chandos-street, Cavendish-square, W. Thurs., at 5 P.M., Dr. L. S. Burrell: Hæmoptysis. Free to members of the medical profession.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Tues., 2 P.M., Mr. Victor Bonney: Special Demonstration. Free to members of the medical profession.—BETHLEM ROYAL HOSPITAL, S.E. Tues. and Sat., 11 A.M., Lecture demonstrations on the Psychoses.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Jan. 24th.—10 A.M., Surgical Clinic. 2 P.M., Medical Cases in the Wards. 2.30 P.M. to 5 P.M., Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 P.M. to 5 P.M., Medical, Surgical, Throat, Nose, and Ear Clinics, Operations.
WEDNESDAY.—2.30 P.M. to 5 P.M., Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M., Dental Clinic. 2.30 P.M. to 5 P.M., Medical, Surgical, and Ear, Nose, and Throat Clinics. Operations.
FRIDAY.—10.30 A.M., Throat, Nose, and Ear Clinics. 2.30 P.M. to 5 P.M., Surgical, Medical, and Children's Diseases Clinics. Operations.

POST-GRADUATE HOSTEL, Imperial Hotel, Russell-square, W.C.
TUESDAY, Jan. 25th.—9 P.M., Prof. C. C. Choyce: Pre-Listerian Surgery.
THURSDAY.—9 P.M., Symposium: The Thyroglossal Tract. Chairman: Mr. W. G. Spencer. Speakers: Mr. A. P. Bertwistle, Sir J. Dundas-Grant, W. McAdam Eccles, and Prof. J. E. S. Fraser.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Jan. 28th.—4 P.M., Mr. J. D. McLaggan: The Treatment of Chronic Suppurative Otitis Media.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Jan. 25th.—5 P.M., Dr. A. C. Roxburgh: The Eyrthrodermias.
THURSDAY.—5 P.M., Dr. Knowsley Sibley: Electrotherapeutics.

ROYAL NORTHERN HOSPITAL POST-GRADUATE COURSE.
TUESDAY, Jan. 25th.—3.15 P.M., Dr. Malcolm Donaldson: Salpingitis. Free. Tea at 4.15 P.M.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Jan. 27th.—4 P.M., Mr. Doyne: Cataract in Infancy.

ST. MARGARET'S HOSPITAL FOR WOMEN, Acomb-street, Whitworth Park, Manchester.
WEDNESDAY, Jan. 26th.—4.15 P.M., Dr. S. Herbert: Physical Factors in Physical Disease.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, Jan. 28th.—3.30 P.M. (at the Royal Hospital), Dr. Abercrombie: Clinical Cases.

Appointments.

BRIDGE, J. C., F.R.C.S. Edin., has been appointed Senior Medical Inspector of Factories.
DONNAN, J. M., M.B., Ch.B. Edin., Police Surgeon and Police Medical Attendant, Dumfries.
DUNN, JEANNIE P., M.B., Ch.B. Edin. D.P.H., Medical Officer of Health for Dumfries.
KERR, J. M. M., M.D., C.M. Glasg., F.R.F.P.S. Glasg., Regius Professor of Midwifery in the University of Glasgow.

Vacancies.

For further information refer to the advertisement columns.

Adelaide University, South Australia.—Elder Professorship of Anatomy. £1100.
Banchory Sanatorium.—Med. Supt.
Birkenhead Borough Hospital.—Hon. S. and Hon. P.
Bradford, Municipal General Hospital, St. Luke's.—H.P.'s. and H.S.'s. Each at rate of £200.
Bradford Royal Eye and Ear Hospital.—H.S. £120.
Bristol Mental Hospital.—Second Asst. M.O. £400.
Cambridge, Addenbrooke's Hospital.—Cas. O. and Res. Anæsthetist. At rate of £130. Also Hon. Asst. P. for Electrical and X Ray Dept. Also Hon. Asst. S. to Ear, Nose and Throat Dept.
Central London, Throat, Nose and Ear Hospital, Gray's Inn-road, W.C.—Res. H.S. £75.
Colindale Hospital, Hendon, N.W.—Jun. Asst. M.O. £500.
Croydon General Hospital.—Hon. Jun. P.
Ealing Borough.—Asst. M.O.H. £600.
Elizabeth Garrett Anderson Hospital, 144, Euston-road, N.W.—Children's P.
Home Office, Whitehall, S.W.—Medical Inspector of Factories, £600, with bonus.
Italian Hospital, Queen-square, W.C.—Hon. Asst. Anæsthetist.
London Hospital, E.—Asst. P.
London Jewish Hospital, Stepney Green, E.—Asst. S. to Ear, Nose and Throat Dept.
London Lock Hospital, 91, Dean-street, W.—H.S. At rate of £200.
Macclesfield General Infirmary.—Second H.S. £150.
Manchester, Christie Hospital, Lorne-street, Upper Brook-street, Anæsthetist. £25 for one morning weekly or £50 for two mornings.
National Hospital, Queen-square, W.C.—Registrar. £200.
Newcastle-on-Tyne, Northern Counties Institution for the Deaf and Dumb.—M.O.
Northampton General Hospital.—Two H.S.'s. Each at rate of £150. Also Hon. Asst. Surg.
Oswestry, Shropshire Orthopædic Hospital.—Jun. H.S. £150–£250.
Queen's Hospital for Children, Hackney-road, E.—Cas. O. At rate of £100.
Royal Chest Hospital, City-road, E.C.—Pathologist. £300.
Royal National Orthopædic Hospital, 234, Great Portland-street, W.—Hon. S., Hon. P., and Hon. Dental Surg.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Med. Reg.
St. Marylebone General Dispensary, 30, Marylebone-lane, W.—Hon. Dent. S. Also Dent. S. to L.C.C. Dental Clinic.
St. Thomas's Hospital, S.E.—Surg. to Out-patients.
Shrewsbury, Royal Salop Infirmary.—H.S. £250.
Southampton, Royal South Hants and Southampton Hospital.—Hon. Asst. P.
Stoke-on-Trent, North Staffordshire Royal Infirmary.—Radiologist, £500.
University College Hospital, Gower-street, W.C.—Hon. Associate P. and S.
University College Hospital Medical School, University-street, Gower-street, W.C.—Demonstrator in Bacteriology. £250.
Walthamstow, Wanstead and Leyton Hospital, Oxford-road, E.—Hon. Radiologist. Also Pathologist.
Welsh Board of Health.—M.O. £600.

The Secretary of State for the Home Department gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act for the District of West Bromwich County Court (Circuit No. 25). Applications should reach the Private Secretary, Home Office, not later than Feb. 4th.

The Chief Inspector of Factories announces the following vacant appointments for Certifying Factory Surgeons: Crickhowell (Brecknockshire), Newton Mearns (Renfrewshire), St. Columb (Cornwall), and Shefford (Bedfordshire).

Births, Marriages, and Deaths.

MARRIAGES.

LOUGHBOROUGH—MATHER.—On Jan. 12th, in London, Dr. G. Trevor Loughborough, of Bentinck-street, W., to Mrs. B. Vanstone Mather, of Ashley-gardens, S.W.

DEATHS.

JONES.—On Jan. 10th, at a London nursing home, William Percy Jones, M.D., late of Brent, South Devon.
LARKIN.—On Jan. 13th, at his residence, Craven House, Grove Park, Kent, Frederick George Larkin, F.R.C.S. Eng. (honorary), in his 80th year.
OWEN.—On Jan. 14th, in Paris, Sir Isambard Owen, M.D., F.R.C.P., D.C.L., LL.D., &c., Consulting Physician to St. George's Hospital, aged 76.
PASMORE.—On Jan. 12th, at Chelsham House, Warlingham, Surrey, Edwin Stephen Pasmore, M.D., M.R.C.P., Medical Superintendent, Croydon Mental Hospital.
SHAW.—On Jan. 14th, after a short illness, Thomas Claye Shaw, M.D., F.R.C.P., M.R.C.S., of Claremont Lodge, Cheltenham, and Queen Anne-street, London.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1926.

THE Index and Title-page to Vol. II., 1926, which was completed with the issue of Dec. 25th, is now in preparation. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2. Subscribers who have not already indicated their desire to receive Indexes regularly as published should do so now.

Notes, Comments, and Abstracts.

MEDICINE IN ANCIENT GREECE.

Sir James Berry (the President) and Lady Berry received the guests at a social evening held by the Royal Society of Medicine on Jan. 17th, when Prof. A. W. Sheen gave a short address on Greek medicine.

He began by tracing the mythical career of Æsculapius, the God of Medicine, who was depicted a commanding figure, leaning upon his serpent-entwined staff. He was a pupil of Cheiron, the kindly centaur, but unlike his companions, who trained as warriors, Æsculapius dug up healing herbs and learnt their virtues. So proficient in healing did he eventually become that Pluto feared the underworld would lose its population and killed Æsculapius by the hand of a Cyclops. Apollo, his father, was angered and Æsculapius was made a god. Prof. Sheen illustrated the story with lantern slides showing the daughters of the God, Hygeia and Panacea, and a group of suppliants approaching the God and his family. The sacred serpent is a feature of all ancient statuary and is still the badge of medicine.

In Homer references to medicine are frequent. Podalirius and Machaon were warriors as well as physicians and brought ships and men to the war: "Full thirty sail the sparkling waves divide, which Podalirius and Machaon guide." They were held in high esteem, for "a wise physician skilled our wounds to heal, is more than armies to the public weal," and, when Machaon was wounded there was great consternation amongst the Greeks for, said one, "a physician is worth a host of other men." A woman who might be described as the first trained nurse in history—"Hekamede of the beautiful hair"—attended Machaon in Nestor's tent, gave him a stimulating drink and dressed his wound. Malaria and rickets are indicated in Homer; also the "drink of oblivion" (probably opium), but references to wounds predominate, for the gods could suffer from injury but not diseases. A beautiful vase-painting shows Achilles bandaging the arm of the wounded Patroclus, from which it is evident that he was an amateur in the art.

Solon, the great law-giver (B.C. 638) described physicians as follows: "Others, who have the profession of Paion, god of medicines, are the physicians; neither on their labours is any certain issue fixed. Often from a trifling pain comes great suffering, and no man can alleviate it by administering soothing drugs. But sometimes, when a man is afflicted with disease fell and fierce, the physician by touching him with his hands at once makes him whole."

Clinics and Temples.

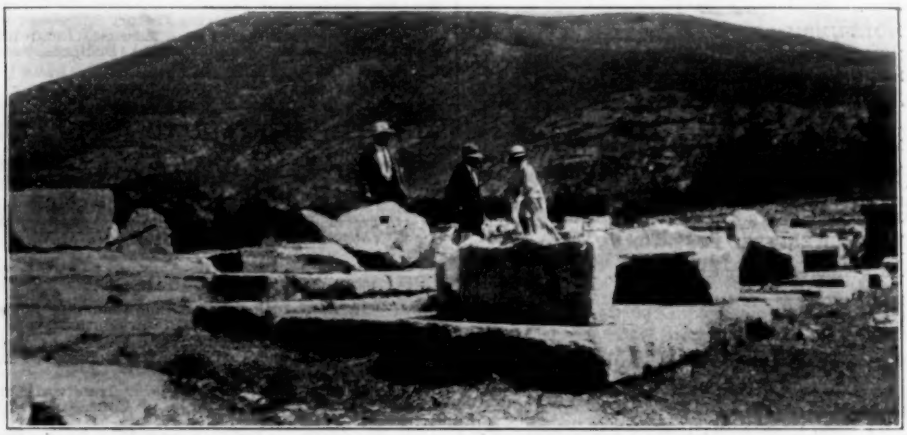
Describing the development of Greek medicine, Prof. Sheen drew attention to the Iatria or surgeries, and showed pictures illustrating their work and the instruments used in them. One vase-painting shows the medical practice; the physician is letting blood, a patient smells a flower, another awaits bleeding, whilst other patients are a man with bandaged leg, a dwarf, and a man leaning on a staff. He quoted Aristophanes' description of physicians: "Lazy, long-haired, foppish individuals with rings and carefully polished nails." With orthodox physicians were mixed up quacks of various kinds, human needs being served and human weaknesses exploited in the manner of to-day.

Of the numerous health temples that at Epidaurus was described, and a photograph of the ruins was shown (Fig. 1). Beautifully situated in the pure air of the hills the many buildings with open-air wards permitted development of rational treatment alongside priestly methods. The Temple of Æsculapius contained the great gold and ivory statue of the God, whilst in the "pump-room" were two paintings, one of Methe (drunkenness) looking through a wineglass, the other of Eros (love) laying aside his quiver for the lyre—a less dangerous weapon. Perhaps the paintings were there as salutary warnings to the patients. Deciphered tablets from the walls of the wards show most remarkable cures. Heraieus of Mytilene, for instance, had no hair on his head; the God applied an ointment and next morning the head was thickly covered with hair. Another inscription indicates the treatment of dropsy by cutting off the patient's head, holding him by his heels and letting the fluid run out; after which the head is put on again. Sane methods of treatment undoubtedly developed in spite of such absurdities.

Hippocratic Period.

The great period of Greek medicine was reached in the time of Hippocrates, "the father of medicine," who lived in the latter half of the fifth century B.C. Hippocrates was a rational clinical physician whose work has endured for all time. Prof. Sheen described the School of Hippocrates: the Health Temple on the Island of Cos, situated 400 feet up on a south-facing hill, and in its general arrangement much resembling Epidaurus. He quoted many of the sayings of Hippocrates. "And this I know that to the human body it makes a difference whether the bread be fine or coarse" is evidence of a modern opinion. The Hippocratic facies: "A sharp nose, hollow eyes, collapsed temples, the ears cold, contracted and their lobes turned out; the skin about the forehead being rough, distended and parched; the colour of the whole face being green, black, livid or lead coloured," gives a very true description of impending death, and may be compared with Shakespeare's dying Falstaff: "His nose was as sharp as a pen and he babbled of green fields." Cheyne-Stokes breathing was thus described: "The respiration throughout, like that of a person recollecting himself was rare and large," whilst the duties of a physician were summarised as follows: "The physician must be able to tell the antecedents, know the present and foretell the future—must meditate these things and have two special objects in view with regard to diseases, namely, to do good or to do no harm. The art consists in three things—the disease, the patient, and the physician. The physician is the servant of the art and the patient must combat the disease along with the physician." Arrangements for operation, said Prof. Sheen, were given in great detail by Hippocrates and his school. The instruction that

FIG. 1.



The Temple of Æsculapius at Epidaurus; from a photograph by Mr. Laming Evans. The visitors are the President of the Royal College of Physicians of London, Lady Bradford, and Sir Hector Mackenzie.

"the robe in a neat and orderly manner is to be thrown over the elbows and shoulders equally and proportionately," suggested a pleasing contrast to the blood-bespattered old frock coat of not many years ago, whilst the following injunction to silence was apposite to-day: "Those about the patient . . . must hold the rest of the body steady, in silence, and listening to the commands of the operator." The treatment of fractures was quite modern. Besides splints—sometimes recommended only to avoid blame from the common people—waxed bandages were used and readjusted on the third and seventh days. "The model by which we judge the part be properly set is the sound part of the same name or the part which is its pair," which sound advice is sometimes neglected nowadays.

FIG. 2.

A Hippocratic bench.

[*Wellcome Historical Museum* (copyright).

The history of the Bench of Hippocrates through the ages, continued Prof. Sheen, is quite romantic. It was a "proper wooden machine with all the mechanical powers applicable in cases of fractures and dislocations. For this purpose it will be sufficient to possess a board in length, breadth and thickness resembling the quadrangular threshing-boards made of oak" (Fig. 2). A refectory table discovered in an old Italian monastery was found on "dissection" to be a Bench and is now in the Wellcome Historical Medical Museum, London. The Hawley table is the Bench's modern counterpart.

The celebrated aphorisms of Hippocrates—412 in number—were next alluded to. "Life is short and Art long; the occasion fleeting, experience fallacious and judgment difficult," and another, "Where sleep puts an end to delirium it is a good symptom" were given as evidence of their quality. The "succussion splash" was thus described: "You will place the patient on a seat which does not move, an assistant will hold him by the shoulders and you will shake him applying the ear to the chest so as to recognise which side the sign occurs." The attitude of Hippocrates towards epileptic fits well illustrated his rational mind: "It is thus with regard to the disease called Sacred; it appears to me to be nowise more divine nor more sacred than other diseases, but has a natural cause from which it originates like other affections. Men regard its nature and cause as divine from ignorance and wonder because it is not at all like to other diseases." The Oath of Hippocrates showed his high ideals of work and service. Not even casual conversation is to be repeated: "Whatsoever I shall see and hear in the course of my profession, as well as outside my profession in my intercourse with man, if it be what should not be published abroad, I will never divulge, holding such things to be holy secrets."

Conclusion.

Prof. Sheen quoted what he called a truly Hippocratic maxim from Plato who says—through the mouth of Socrates in the Charmides—"that where there is eye trouble you must treat the head and you cannot treat the head without treating the whole body." He referred to Herophilus (B.C. 300) whose name is preserved in the term, Torcular Herophili, and to his wonderful fragment, "Science and Art have equally nothing to show, strength is incapable of effort, wealth useless, and eloquence powerless if Health be wanting." He concluded his address with his favourite Hippocratic sentence: "Where the love of man is, there is also love of the Art."

HEALTH AND SANITATION IN IRAQ.

IN the recently published report by H.M. Government to the Council of the League of Nations on the administration of Iraq for the year 1925, considerable space is devoted to medical and sanitary matters.

Distress Caused by the Severity of the Weather.

The winter of 1924–25 was marked by its extraordinary severity. In Baghdad until the middle of February the temperature fell frequently at night below freezing point; in the north and in the highlands of the eastern provinces snow and extreme cold devastated the flocks, and if on the southern desert border the cold was less severe, both flocks and shepherds were less accustomed to bear it, and suffered great distress. Very little rain fell, and that which occurred during the frost was useless to cultivators. The spring harvest was, in consequence, exceptionally bad, and the summer harvest was equally affected by lack of water in the rivers for irrigation purposes. Already, in February, the Council of Ministers agreed to exempt from customs duties imported wheat, barley and flour, in view of the alarming high prices which had been reached. But in the north the situation went from bad to worse owing to the ravages of locusts, and by the autumn the shortage of grain was so disastrous that steps for the relief of an almost starving population were necessary. Seed grain for the ensuing harvest had also to be provided in many parts of Iraq, and loans issued to needy cultivators.

Health Services.

During the year the health service has continued its steady progress and development, free for the first time in its history from the fear of experimental budget reductions, and happy in the thought that its organisation and scope of work appeared to be at last on an accepted basis. The service has fortunately been free from anxieties in the shape of severe epidemics or other abnormal outbreaks of disease amongst the population. During 1925 the service maintained 18 hospitals and 53 dispensaries in the different liwas of Iraq. The total number of beds in all the hospitals in the country is 1170. The Maude Memorial Hospital at Basra has been completed, and all its departments are now functioning with the exception of a ward for women which it is hoped to furnish and staff in the new financial year.

Infectious Diseases.

There has been nothing abnormal in the number of cases reported of the various infectious diseases with the exception of plague, of which only 20 cases were noted. This is by far the lowest figure since the British occupation of the country. The reason for this very low incidence of plague was undoubtedly the cold weather of the winter of 1924–25, which killed off a large proportion of the animal population and amongst which the rat population suffered very severely. An additional favourable factor was the effect of the cold weather on the fleas, conditions being very unfavourable for their breeding in the early spring, the season when they are usually most prevalent. It would be very unwise to deduce that this very low incidence of plague will tend to continue, and, as a matter of fact, at the moment of writing this report, conditions are such that it appears probable 1926 will be a bad plague year.

An increase of small-pox is accounted for by epidemics amongst tribes in the Amara, Kirkuk, and Muntafiq liwas.

Enteric group diseases appear to be definitely on the increase during the last five years. Reported cases are diminishing in Basra, while they are increasing in other areas. The increasing incidence of measles and mumps within the period is of no particular importance; notification is better amongst the tribes. The increase of tuberculosis is apparent only; for example, 147 cases are reported this year from Karbala, compared with 95 in 1924, and 8 only in 1923. Re-reporting of old cases and the personal factor of the reporting medical officer or general practitioner are the most probable cause of the increase.

The table of patients treated in health service institutions in the various liwas shows that the institutions are doing very good work, and that there is a steadily growing appreciation of the facilities provided.

Prostitution.

A form of control exists in all towns where recognised prostitutes practise, and there is no doubt that where the powers of control are honestly enforced, a benefit to the public results, though the actual benefit is impossible to estimate by any statistics that can be obtained as to the incidence of venereal disease amongst the general public. Under present conditions the problem of prostitution is impossible of solution in Iraq, the chief obstacle being that in Iraq, as in the majority of eastern countries, once a woman has taken up, or been forced into, prostitution she has no means of escape from it, since there are practically no occupations in which an independent woman can earn

an honest living. Compulsory prohibition of prostitution, or enforced cessation from practise of infected prostitutes, if efficiently enforced, would be a sentence of death to thousands of these women, unless the Government could provide institutions for their maintenance for the rest of their lives.

Public Health.

The whole of the institutions of the Health Service play their part in the combat of epidemic and endemic disease. With the exception of the liwas of Basra and Baghdad, the health authorities of each liwa is the civil surgeon, who has charge of all institutions, is also responsible for all sanitary measures for the combat of infectious disease, and is the adviser on sanitary matters to all municipalities in his area. The Port and Liwa of Basra are under the sanitary control of a specialist health officer, and the epidemiologist attached to the headquarters of the Health Directorate has special sanitary control over the Baghdad Liwa in addition to his general duties, which also include control of the pilgrim traffic. These arrangements work well in practise, and Iraq may be considered as possessing an efficient sanitary organisation for the combat of infectious diseases. The only assistance that the country requires from outside sources in this connexion is the establishment of research laboratories for the study of malaria, bilharzia, and other endemic diseases of the country, such as have been provided by the Rockefeller foundation in other parts of the world.

Pilgrim and Corpse Traffic.

The control of pilgrims and of the transit of corpses for burial in the holy cities of Iraq has been greatly strengthened. The Corpse Traffic Law was passed at the end of 1924, and came into full operation in March, 1925. This law provides for examination of corpses at the frontier of Iraq by quarantine officials, the issue of transit passes, and the checking of these passes by quarantine officials at the place of burial. Prior to the operation of this law a large amount of corpse smuggling was taking place, the corpses once within the country passing as local corpses and being free from transit fees or other interference. The new system, by which special transit passes for local corpses are also required, renders it impossible for corpses to be buried at the holy cities without production of a pass or payment of transit dues. A large amount of smuggling is still taking place, but this now only results in a loss of revenue, without loss of sanitary control, since all corpses in transit are now inspected whether of foreign or local origin. The numbers of foreign and local corpses for which transit permits were issued since April, 1925, were 4124 and 12,178 respectively. The issue of passes for pilgrims has also been taken over this year by the Health Service at the Quarantine Station of Khanaqin and the number of pilgrims examined and given passes at this station during 1925 was 18,199 (15,348 males and 2851 females). It will be observed from these figures that the pilgrim traffic is resuming its normal figures; this is due to more stable conditions in Persia. Owing to troubles in the Hejaz and in Syria no pilgrimage to Mecca took place from Iraq either by the sea or overland routes.

Medical Education.

The Government maintains a school of pharmacy and provides facilities for the training of midwives, nurses, dressers, and vaccinators. It is a matter for regret, however, that its finances have not as yet allowed it to institute a school of medicine for the training of doctors. Skilled personnel exist in the Health Service who could undertake all necessary professional duties, special institutions exist which could be used for educational purposes, and the cases treated at the Royal Hospital in Baghdad afford magnificent facilities for the instruction of medical students. The sole obstacle to the establishment of a school is the question of a suitable building for its accommodation, which must be in a site immediately adjacent to, if not in the grounds, of the Royal Hospital.

ORDEAL BY BATTLE.

Two correspondents have written to correct and expand a misleading historical reference in a recent article on "Standing Mute of Malice." It was there stated that Abraham Thornton had recourse to the obsolete legal process of ordeal by battle in 1817, "and thus evaded the consequences of a conviction for murder." Thornton was protecting himself against the risk—some might call it almost the certainty—of a conviction, but he was never actually convicted. His story was summarised in THE LANCET of April 3rd, 1926, in a review of Sir John Hall's volume in the "Notable British Trials" series. Thornton was acquitted at Warwick Assizes, but public opinion was so sure of his guilt that an obsolete procedure (appeal of murder) was invoked to obtain a re-trial. To this he replied with his offer of battle. Both these ancient processes were abolished by the Statute 59 Geo. III. c. 56.

PUBLIC HEALTH IN BRITISH HONDURAS.

IN his report on this Colony for the year ended Dec. 31st, 1925, Mr. C. Douglas-Jones, Colonial Secretary, states that the estimated population is 47,893 (23,683 males and 24,210 females). The birth-rate for the year worked out at 37·27 per 1000 of the estimated population. The deaths corresponded to a rate of 21·38 per 1000. The principal causes of death, in order of frequency, were diseases of the digestive system, diseases of the circulatory system, and diseases of the respiratory system. There were 29 deaths from malaria, 6 from influenza, 50 from pulmonary tuberculosis, and 21 from enteritis. An outbreak of dysentery occurred in the lunatic asylum, in which 26 cases were treated, with 8 deaths. Malaria, while being prevalent, was of a mild type, there being only 29 deaths certified by medical practitioners as due to this cause. Pulmonary tuberculosis seems to be on the increase, both in the town of Belize and in the districts. Symptoms of hydrophobia were shown by dogs in Belize in April, but it was not until June that a fatal case of rabies occurred. The total number of deaths from this cause was four. A muzzling order was introduced, and the shooting of unmuzzled dogs within certain hours had the desired result of exterminating all stray dogs and checking the spread of the disease. Anti-rabies vaccine has been used with success. The climate of British Honduras compares favourably with that of other tropical countries with small European population. Europeans leading a normal life and taking common precautions find the climate pleasant and healthy. The highest rainfall was as usual at Punta Gorda in the Toledo district, which had a total of 207·68 inches and 221 days on which rain fell. The lowest rainfall was at Corozal, which had a total of 34·12 inches. At Belize the rainfall was 86·01 inches. The hottest day was May 25th, on which the thermometer registered 91·5°., and the coldest day was Nov. 24th, when it registered 59·5° F.

HERPES AND VARICELLA.

To the Editor of THE LANCET.

SIR,—The following case is of interest in connexion with the alleged relation between herpes and varicella. On Dec. 20th, 1926, a gardener developed herpes zoster ophthalmicus. On Jan. 5th, 1927, his three children, two girls aged 8 and 9 years respectively, and a boy aged 5, all showed definite chicken-pox. The source of this outbreak of varicella could not be traced apart from the above-mentioned herpes. The time between the herpes and chicken-pox is sixteen days. The children were seen by me at one of the school clinics.

I am, Sir, yours faithfully,

FREDERICK W. GAVIN, M.B., Ch.B., D.P.H.,
Jan. 18th, 1927. Asst. M.O., Surrey C.C.

AN IRRADIATION CLINIC.

A REPORT by the Health Committee of the Northamptonshire County Council gives a preliminary account of some results obtained with an installation for ultra-violet radiation recently provided at the Wellingborough Dispensary, primarily for the treatment of lupus. A total of 25 patients have been in attendance for irradiation; 12 were suffering from lupus and allied conditions, 10 were pre-tuberculous and had been selected for treatment on account of general debility, failure to gain weight, or wasting, and 3 were suffering from pulmonary tuberculosis. The whole group of cases, exclusive of those suffering from pulmonary tuberculosis, has shown a total gain in weight of 65 lb. and a loss of 1 lb. as compared with a gain of 12 lb. and a loss of 15 lb. in the three months before this treatment was started. All the cases of lupus show marked improvement. A discharging tuberculous abdominal sinus of three years' duration is soundly healed; a case of lupus pernio of three years' duration is healed and normal, and two cases of discharging tuberculous glands in the neck associated with gross keloid are practically healed and promise good cosmetic result. A case of facial and intranasal lupus has so far improved that the face is normal and the nasal mucous membrane reveals no signs of disease; a case of extensive and severe lupus erythematosus has remarkably improved, whilst another case of ordinary lupus is soundly healed and has gained 5 lb. in weight. It was noticed that associated conditions such as boils and blepharitis cleared up quickly when their tuberculous lesions were treated by irradiation. The pre-tuberculous children gained in appetite and general brightness and the only cases in which there has been little or no improvement are those of pulmonary tuberculosis. It is considered too early, however, to assess the value of irradiation in this disease.

FORTY-THREE YEARS A CORONER.—On Jan. 15th Mr. S. Brighouse, who is 77, completed 43 years as coroner for South-West Lancashire. He has conducted over 20,000 inquests, including the famous Maybrick inquiry.